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Three Hundred Years of War.

By Prof. R. M. Johnston.*

THE vast conflict that has broken out in Europe is in part the result of factors that can best be understood by glancing back some few centuries along the course of European history. And in doing so it will be as well as avoid cataloguing dynasties and delving into institutional changes, the bane of present-day historiography, and to emphasize instead the mixed economic and military factors that have largely helped to create the Western Europe that we know. In doing so we shall incidentally come into contact with some of the facile if unconvincing theories ostentatiously brandished in the faces of abashed historians by strenuous competitors for Nobel peace prizes.

If a date must be picked at which the current of international politics turned into the channel with which we are now familiar, the year 1600 will answer the purpose well enough, save for the conception, then already full fledged, of the balance of power. Holland, at the very beginning of the 17th century, rapidly passed through phases that illuminate the whole current of events from that day to this. Let us glance at a few ancient facts and modern doctrines. One of the theories most ardently propagated by the million-dollar endowments is that war fatally saps a nation's vitality because it destroys the most valuable part of its population. The fallacious assumptions contained in this doctrine are plentiful, but it will suffice for our purpose to attack it at one point only, and with Holland as the example. That country sustained one of the most desolating wars recorded in modern history, and a war that lasted, with scarcely an inter-

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ruption, for no less than forty years (1568-1609). Towards the close of the conflict success, coupled with maritime preponderance, inclined to the Dutch arms. Hardly had it terminated than the Dutch people displayed such extraordinary energy as perhaps no European state has ever equalled. Almost immediately they captured the carrying trade of Europe and developed a commercial civilization that was the wonder and envy of all their neighbors.

Three years before the truce of 1609 it was already reckoned that the Dutch had three ships to the English one, while half a century later Colbert stated that there were about twenty Dutch ships to every French one. Their cities throve as none other in Europe. Their art rivaled that of Italy and Spain and France. With Grotius, they founded systematic international law. With Spinoza, a little later, they founded the philosophy of materialism. And all this gigantic work was accomplished by a little nation the vitality of which, according to all the pseudo-historical theories of the sciolist of pacifism, should have been utterly destroyed by war.

What, then, is the truth of the matter? It would appear to be that the energy generated by war, the confidence engendered by success, and the adaptability and resourcefulness taught by military enterprise, far offset any debit that may come from the loss of a percentage of the young male population. Successful war, even of such prolonged and devastating character as the Dutch war for independence, is the sure forerunner of a vigorous period of expansion. For modern instances of the rule we need seek no further than our own Northern States after the civil war, or Germany after the war of 1870.

When Holland entered on her great era and took the lead of Europe at the beginning of the 17th century, what was the reaction on her and on her neighbors? The Dutch, emerging from war into great economic activity, almost immediately forgot the military virtues and became materialistic and pacific. They rebelled from military service, pared down all military expenses, and, to cover their growing wealth, evolved theories of neutrality and universal pacification. Their neighbors, and for the present purpose we may single out England, took an opposite line. To the pacifist theories of Grotius, England, jealous of Dutch prosperity, decided to reply "not so much by discourses as by the

louder language of a powerful Navie."* She deliberately embarked on a militarist policy.

Here, before going further, it may be as well to interpose a few observations on the distinction, not often enough made, between the militarism of land and that of sea. Admiral Mahan has laid down in terms that are perhaps too sweeping an argument for the supremacy of sea power over land power. It is true to say that the factor represented by sea power had been much neglected by historians before he so brilliantly called attention to it. But it is also true to say that the decisiveness of sea power has not been quite so constant as he claims, and that it must vary in every conflict with the general situation of the combatants. Obviously, a struggle between Servia and Bulgaria might not be in any way affected by sea power, while one between England and Germany must be so inevitably.

But Admiral Mahan has rarely been happier than when pointing out how unemphatic, subtle and underlying is the influence of sea power. And there lies one of its chief differences from land power. From 1805 to 1812 the world viewed Napoleon as a giant and England as a pigmy; yet, if sea power was really more decisive than land power, then in reality the case was the opposite. The truth lies, of course, in Admiral Mahan's observation that the impression and effect of sea power are less obvious, less insistent.

Again it may be remarked that land power is intimately associated with monarchism, territorial ambition and the clash of nationalities, whereas sea power is more closely identified with the expansion of shipping and commercial activity; it is only when the latter takes on the form of colonial acquisition that it coincides with the more emphatic features of land power. Thus, as a general thing, the militarism of the sea is connected with more legitimate, more pacific objects than that of the land, and this again tends to render it a less conspicuous object of national policy than the maintenance of large land armaments. Yet in respect of colonial expansion, still an object of national ambitions with several nations at the beginning of the twentieth century, sea power has been as great a factor of strife in the past as land power.

The sudden expansion of Dutch commerce at the beginning

*Mr. Secretary Coke to Sir William Boswell, April 16, 1635.

of the 17th century, the practical monopoly of the herring fishery of the North Sea, the virtual control of the carrying trade from the Baltic to the Mediterranean, proved more than England could compete with by pacific means. She, therefore, promptly entered on a policy of naval militarism so as to crush Dutch competition by force of arms. She built larger men-of-war than had yet been seen. She developed the first school of naval architects. Charles I tried to build up a powerful navy by the famous tax known as Ship Money. The Rump Parliament passed the Navigation Act of 1651 levelled against the Dutch carrying trade. And in the following year the first of a series of wars broke out that were to establish the maritime supremacy of England and to found the greatness of her merchant marine. How conscious was the militarism behind this policy is well shown in the following passage from John Evelyn:

> A spirit of commerce, and strength at sea to protect it, are the most certain marks of the greatness of Empire. . . . Whoever commands the ocean, commands the trade of the world, and whoever commands the trade of the world, commands the riches of the world, and whoever commands that commands the world itself.*

It is no exaggeration to say that the spirit of Evelyn's utterance has inspired the naval policy of England from that day to this. That policy has gone through phases of much significance. One of its most constant features has been the determination to destroy any rival navy. And in this particular it may be observed that the sea militarism of England has been on the whole more jealous and more exclusive than the land militarism of other countries. A preponderant fleet has meant facility of colonial acquisition; and it is only within the last twenty years that the rôle of the British navy has changed in this respect. Until the close of the 19th century it facilitated conquest; now, with the world's boundary lines established through all the continents, the part of the British navy has changed in this particular, and its object has become stabilizing and defensive, no longer aggressive.

England's supremacy at sea and her deliberate policy of ruining the commerce of her competitors, led her for a long period to

*Evelyn, *Navigation and Commerce*, McCulloch's reprint, London, 1774; p. 41.

take an attitude flagrantly hostile to international comity and international law. The Dutch struggled hard to obtain by treaty the protection of the neutral carrying trade in time of war. England either resisted diplomatically, or through the action of her admiralty courts denied neutrals any real protection. The treaties of Utrecht, at the beginning of the 18th century, marked an advance in this matter, but the attitude of England became so flagrant that at the close of the century two armed neutralities were formed against her and demanded, though without success, an international code for the protection of commerce. During the period of the Congresses, from Vienna to Verona (1815-1823), England continued to stave off any European joint action in such matters, and it was not until 1856 that she finally accepted an international pact. Even now there are points in relation to the rights of neutrals which England refuses to concede.

While Holland lapsed into pacifism and barely succeeded in saving her independence and part of her trade from the attacks of her neighbors, and while England embraced a policy of sea militarism, Bourbon France turned to land militarism. Her wars prior to the French Revolution were wars of ambition and conquest, gradually becoming more colored by economic and colonial consideration, entailing the development of a considerable navy. Two points should be borne in mind in connection with the wars of the Bourbons: one is that their armies, however inflated, were professional armies; the other, that the scene of hostilities was as a rule comparatively remote and backward in civilization.

Then came the French Revolution and many innovations. Of these none was more significant, when we consider the great war now raging in Europe, than the substitution of national for professional armies. The Bourbon army in part disintegrated. Volunteers came forward to save the new national institutions. Numbers replaced efficiency. Presently the conscription seized on all able-bodied citizens as the natural defenders of their country. With Napoleon at their head, they poured a devastating flood over Europe, and after Jena the great monarchies of the northeast came to the conclusion that France could be withstood only by the same weapon as she herself wielded, a conscript national army.

Whether Jena did or did not justify any such conclusion does

not belong to the present discussion; the fact remains. From that epoch to the present day land militarism has been on a new footing; national armies have taken the place of professional armies. At the moment of change no one noticed how much was involved; there was too much at stake in the struggle. Between then and the present day Western Europe has only witnessed one war on a large scale, that of 1870 between Germany and France. Of that war this may be said: that conscription in 1870 was not nearly so severe a drain as it is at present, particularly in France; and that Germany was fighting for one of those great national ideals that reconcile strong races to heavy sacrifice. But now, in 1914, the throwing into the melting pot of war of the great conscript armies of France and Germany has proved a shock to civilization, a shock so great that we shall undoubtedly witness its results in terms of reaction. And the shock has come largely from the magnitude and comprehensiveness of war waged under such conditions, of war that paralyzes the industrial life of a country, of war that sends to the front not professional soldiers but peaceful artisans, lawyers and merchants, artists and musicians, of war that crowds great stretches of peaceful country with continuous armies. And when we ask for the reason of it all, we come once more to some difficult and complicated considerations.

If we analyze the present war for its deeper seated causes, what do we find, apart from militarism? Racial ambitions and economic pressure. Dynastic ambitions have now almost disappeared as a cause for war. It is true that the Hohenzollerns and Hapsburgs still present to the world a problem or two of that character for solution, but even in this case the problems tend to merge in, or to run counter to, those of nationalism. The great struggles of 1848-1870, and that of the present year were largely caused by nationalistic strivings, and it is probably true to say for Europe east of the Bohemian mountains that this will remain for a considerable time to come as potent a cause for war as the more narrow monarchial ambitions of the past. West of Bohemia it may be hoped that this is not the case, and that in the quite circumscribed areas where urgent questions of nationality arise a permanent solution may be found by neutrals' action or otherwise at the close of the present war. To state the economic factor in terms not so much of the immediate present

as of historical evolution is far from easy. Some think that that there is an absolute equivalence between economic and military development in the history of Western Europe. That the two are intimately related is true; but the relation does not seem complete enough to justify any general rule. The variations are too great, while the geographical and trade conditions of no two countries are the same. One fairly wide aspect of the matter is opened out by the difference that clearly exists between the military policy of nations whose interests are largely in foreign trade and those whose interests are mostly internal. How vast an economic expansion do we witness, for instance, in the United States, a country geographically favored; yet the expansion is almost wholly in terms of internal trade. We have, therefore, never looked over our fence at the movement of the world outside, and we have not accompanied our economic with any military expansion. But our situation, both geographic and in terms of foreign trade, is rapidly changing at the present day, and will compel us before very long to examine with some care our relation to the outside world. On the other hand, nations depending largely on foreign trade have tended more, though not inevitably to militarism. England's case we have glanced at. Holland, even more dependent than England on foreign trade, is a case that apparently tells the other way. With Germany we have the interesting problems of the present day. Let us consider a little the cases of these last two countries.

Holland, as we have already seen, emerged rapidly from a terrific military struggle into unparalleled economic prosperity. But having attained that prosperity, she made little effort to retain it. Although it proceeded largely from the sea, she declined to keep pace with England's ship building, she refused to spend money in preparation for conflict, she hoped, but in vain, that the number of her ships and that her time-tried tactics would save her against the heavier vessels and newer tactics of her opponent. In estimating the reasons for her policy, we must add to misjudged economy and pacifism a consciousness of her lack of size. Holland was not big enough seriously to compete with France and England, and it can hardly be doubted that this fact entered deeply into her political consciousness.

Few of Professor Delbruck's generalizations are as convincing as his insistence on mere size as a political factor. We have

now reached a state of development at which this fact, long below the surface in the history of Europe, emerges into clearer view. Behind the European struggle there is, among other things, a question of mere bulk. Russia, China, the United States, set, or soon will set, the standard. South America must in time federate and thus join the group. England bulks large in terms of colonial empire, but in the island in which she concentrates her economic and military resources, feels the pinch already. Germany, with her Austrian reversion, weighs more than the western nations of the European continent, but is so poorly situated geographically as to lose such advantage as this may give her.

The German case is of most interest at the present moment. Aroused to military nationalism by French conquest and arrogance at the beginning of the 19th century, she finally fought her way to unity under Bismarck half a century later. Inevitably she believed, because her past told her so, that national greatness and success could be achieved only through a mighty army. She maintained her army, therefore, together with a forceful code of militarist doctrine unyielding to modern change of opinion. A few years after the close of the Franco-Prussian war suddenly, and somewhat late, she started a great industrial development. With German laboriousness and ability in matters of detail poured into this new channel, she soon filled her own markets and overflowed into neighboring countries, neighboring continents. Shipping was created to carry her exports. Population increased and food soon had to be imported. Finally a navy was built, the military expression of this condition of things, and of the unfortunate situation of Germany geographically.

The development of the German navy has been viewed too superficially as a mere challenge to England. It was that, of course; and the jealous rivalry between Germany and England served as a stimulus and pretext for the building of the Kaiser's navy. But if we look for the underlying causes we shall find them chiefly in the great development of Germany's industries and carrying trade, in her isolated geographical position and dependence on foodstuffs from oversea, in her desire to acquire colonies and foreign markets, and in her feeling that the formidable dyke of England and her fleet, which cuts her off from the

Atlantic, must at all costs be broken down. On the whole, it is a misfortune not merely for Germany but for the world that a nation so productive and expansive should be cooped up between the terrifying mass of Slavdom on one side and an already monopolized Atlantic on the other. Not that this justifies, though it may in part explain, the freaks and brutalities of *welt-politik* and militarism from which the world is smarting today.

Whatever the immediate results of the present war may be, it is clear that in Western Europe it is bound to stimulate the opposition to conscript armies. Partial disarmament, if it should come, would, therefore, mean a return to professional armies. Navies swallow up fewer men than armies, and that of England is a professional force. The sentiment against them is now, and presumably will be in the future, less marked. But, on the other hand, if government in Western Europe becomes more democratic as a result of the war, as seems probable, then the vast expense of navies is likely to prove an incentive toward naval disarmament. If England should embark on such a course, the change would be momentous and not without its effects on this country.

But disarmament, even on land, is not so certain to follow as many believe. It is clear that east of the Bohemian mountains the present war is far more likely to accentuate than to settle the complicated conflicts of nationality and of creed from the borders of Poland to those of Greece. If Germany should suffer a democratic reaction it is doubtful whether she could even partially disarm before a still warlike Russia. And if Germany, under any conditions, remains armed, the outlook is gloomy. Belgium has already found out what it costs to practice pacifism with such a neighbor. What blood, and treasure, and agony she would have saved had she had the common prudence to maintain an efficient army of two to three hundred thousand men!

The question of the size of the European states is bound to emerge from the war in some shape or other. If a Congress is the conclusion, as is likely, then this country is at once confronted by the problem. For it is one of the interesting features of Japan's participation in the conflict that, if it is concluded by a Congress, she will be entitled to meet the other Powers there on equal terms. Perhaps the United States alone of world powers would not participate. This might be a good thing or it might not; but it is at all events worth while enquiring whether the stock argument

against our wishing to participate in such an international deliberation has any validity at the present day, and that brings us at once to the question of the size of the world of international politics.

The stock argument is nearly one hundred years old. It carries us back to the epoch of President Monroe, when it took as many weeks to communicate between America and Europe as it now takes seconds. The policy then enunciated, and it was wise at the time, was that we had no more concern in the affairs of Europe because of its remoteness than Europe had in American affairs. Since then we have consistently maintained this attitude, save in matters relating to international law and arbitration. Can we maintain that attitude any longer? Is Europe still remote? Have not the digging of Panama and the participation of Japan in the war really placed us in the very centre of world politics instead of on the remote edge? Our interest in the humanizing of international politics, the fact that we are acting diplomatically for most of the belligerents—that we have participated in Congresses for the regulation of international intercourse—all these are reasons why we should enter such a Congress and by entering it, why we should broaden its scope and its general utility.

Turning back to the nations of Europe, and still following out the question of size, it seems probable that among the readjustments following the war will be extensions of customs if not of political boundaries. The pooling of military interests almost inevitably follows the pooling of economic interests, and a customs federation of any two or three European states would probably establish peace firmly as between such states and enable them to take higher rank in the economic world. Such changes as these involve great hopes of the pacification of large areas, but entail at the same time grave dangers of military shocks on an even larger scale than that which the year 1914 is witnessing. Europe is already battling to form two or three new groups capable of holding their own with the really great powers of the world, Russia, China, the United States. In that sense we are directly interested in the conflict. Let us, therefore, prepare to play a part not in the conflict but in the pacification.

War and Civilization.

By 1st Lieut. J. M. Holmes, 27th Infantry.

WE OF the present age and generation have fallen heir to a most unusual distinction, one indeed which is destined to stand out unique in the history of the world, viz.: that of having been privileged to observe the initiation and progress of the greatest war against war the world ever waged, and its utter collapse before the onward sweep of the greatest deluge of real war the world has ever known.

Although we on this side of the Atlantic were somehow vaguely aware that we were living in a world which was practically an armed camp and that the heavens were dark with the smoke of even further preparation, many of us, nevertheless, were only yesterday entertaining golden visions of the greatest of all victories won, and a long recreant world at last quiescent and happy in the gentle pursuits of peace. Divers learned individuals, both male and female, had conjured up before our imaginations wonderful word scenes of the greatest nations consigning their mighty armaments to the scrap heap, of the Parliament of Man holding forth at the Hague, and of all races and conditions of men dwelling together in amity and universal brotherhood. Moreover, these same learned individuals had bombarded us with effusions on the "economic waste," the "utter barbarity," and the "infinite folly" of war until many of us had actually become obsessed with the notion that war is the greatest disease with which the world has ever been afflicted; that there never has been a legitimate excuse for it in the scheme of human society; that civilization has advanced only as war has receded; that advancing civilization has reached the stage where war can be dispensed with; and that the intelligent public opinion of the world would utterly preclude any further outbreaks between great civilized nations.

And lo! Like a thunder bolt from a clear sky flashes over an incredulous world the news that the great dogs of war are unleashed. And presently an entire continent is trembling with the exultant tread of twenty million marching men, and vibrating with the roar and thunder of innumerable guns. A thousand ships are prowling about the seas' innumerable reaches hunting

each other like beasts of prey. Stocks the wide world over are shaken, international trade ceases. In ten million homes across the sea, mothers, wives, sisters and daughters, are huddled together waiting dried-eyed and pale-faced, lest a foot-fall at the outer door shall announce the messages of death.

It all seems utterly unthinkable, yet we know only too well that it is true in all its ghastly nakedness and inexpressible horror. But why is it true, is the query that formulates itself in a hundred million startled minds. What does it all mean? Why war? From the lips and pens of an audacious few emanate such acrimonious phrases as "the crime of the ages"; "the inevitable result of unlimited and unbridled autocracy"; "man's reversion to type"; "the world's relapse into barbarism"; "the last great war," etc. Still others are confidently assuring us that it is only the grand deluge that was to usher in the millenium's glorious dawn; and so on *ad infinitum, ad nauseam.*

The time would seem highly propitious, therefore, for a profitable discussion of this great subject. And in the beginning we are constrained to remark that the general attitude of the public appears as foolish as it is incorrect. It is wholly analogous to that taken by the savage relative to the various phenomena of nature which have been fully explained by modern science, and is therefore wholly unworthy of us who above everything else pride ourselves upon our powers of logical and independent thought.

We well know that there is a reason for everything, however unapparent it may be on the surface, and that there must be a reason for war, did we but peer deep enough into the subject. Men have been fighting each other a long time on this planet, and the history of the world is largely a record of their wars. Hence there must be some reason for war in the scheme of things; it must have understandable causes and effects, and there must be some good in it—otherwise war would not be. Personally, then we firmly believe that there is good in it; that there is a valid excuse for it; that it has definite causes and effects; that its effects in the ultimate are eminently beneficial; that in all its phases and ramifications war can be fully explained by modern science; and that the explanation that science has to offer us can be substantiated in every detail by recurrence to the pages of universal history.

Our first appeal then for enlightenment shall be addressed to science. Not only has science untangled the mighty riddle of the

universe and peered into its utmost depths and reaches, but it has deduced the law by which the universe is governed—the law of evolution. In other words it has determined that nature is everywhere striving, creating, organizing, and developing and that the course of movement is always from the homogeneous to the heterogeneous, from the simple to the complex, from a lower to a higher state of being, through systematic differentiation. The universal energy never ceases to act, and its ceaseless activity constantly creates. The quantity of matter and motion in the universe is unchangeable, but everything else changes—position, direction, velocity, path, combination, cause and form. Moreover, nature is through and through creative and every product is at once the effect of antecedent causes and the cause of further effects; and each successive product possesses not only all the properties of the one immediately preceding it, but the additional one by which it is especially distinguished.

The ascending order of development of the successive synthetic creations of nature has been as follows: the universal ether, the chemical elements, the inorganic compounds, protoplasm, plant life, animal life, man, society, each one of which may be regarded as something new. Their primary elements always existed, but the combinations resulting in the several products constitute so many distinct things. Each new plane of existence thus attained constitutes a fresh base of operations; the latest and highest plane thus far attained being man. And man with all the attributes of all the lower products and that of intellect added, generates another and highest product of all society, civilization.

The process of marching from an old to a new base involves three distinct operations, viz: synergy, change of type, and systematic branching which we shall now consider in the order mentioned. Synergy is that universal principle pervading all nature, which explains all organization and creates all structures. It consists in the systematic and organic working together of the antithetical forces of nature, the result of which is production and is primarily and essentially a process of the equilibration of forces. It begins in collision, conflict, antagonism and opposition, after which we have the milder phases of antithesis, competition and interaction followed by a *modus vivendi*, or compromise, and ending in collaboration and cooperation. The products of the process are found in all fields of phenomena. Celestial structures are worlds and world systems; chemical structures are atoms, molecules, and

substances; biotic structures are protoplasm cells, tissues, organisms; psychic structures are feelings, emotions, passions, volitions, perceptions, cognitions, memory, imagination, reason, thought, and all acts of consciousness. Social structures are human families, languages, religions, moral and legal codes, institutions, organizations and societies of whatever nature, peoples, nations and society as a whole.

The working of this principle is best seen in the formation of organic structures. They furnish more of the elements that we must reckon with and show the true nature of organization. For here we have true organs, and all the structures are more or less fully integrated. In this field the contending forces are those of heredity and variation. By heredity we mean that tendency in life to continue in existence, in conformity with the first law of motion, what has been brought into existence. By variation is meant those impinging forces of the environment, including the entire multiplicity of objects in nature, which cause constant deviation from the specified type. Heredity endeavors to pursue the straight path on which it started, but comes into constant collision, constant opposition and constant contact with the forces of environment from all conceivable directions. And being only one of the many forces in the contest obeys all the other laws of motion and is consequently checked, deflected, shunted, buffetted this way and that, and compelled to pursue a very irregular path. In other words the environment constitutes the established mold to which the organism must conform and the process of compelling the organism to undergo these transformations and secure this conformity is known in modern biological language as adaptation. The environment, moreover, is infinitely varied and the number of possible conditions to which organisms may be adapted is infinite, and therefore the further effect is to differentiate the one original hypothetical form which heredity would perpetuate unchanged into an unlimited number of different forms. And so in environment, instead of interposing, an obstacle to life is of the highest advantage and has made the existing multiplicity of forms possible.

Structures, however, are only means. Function is the end. Structures, moreover, are developed along with their functions, which may be regarded in a sense as their cause. For the effort of nature to accomplish its ends results in material means of accomplishing them, and such means are structures. Again, the

perfection of structures and the consequent success with which they perform their functions, determine the degree of efficiency obtained in any particular field. In the organic world, the struggle has the appearance of a struggle for existence. The weaker species go to the wall and the stronger persist; the defective succumb, and the fittest survive. But in any case of survival it it is the best structure. The struggle is consequently raised above that of individuals or even species and becomes altogether a question of the fittest structures. Hence we may qualify Darwin's formula of the struggle for existence and regard the whole panorama of nature as a struggle for structure.

We now come to the second operation in the matter of changing bases, namely, change of type. At the outset it may be stated that in all departments of nature where the statical condition is represented by structures, there is a corresponding dynamic condition consisting in a change of type of such structurers. As was seen, structures represent a condition of equilibrium and are the normal result of the equilibration of conflicting forces. Change of type, on the other hand, is a dynamic process involving movement and is confined to structures already formed. It is a differential process, moreover, and takes place by infinitesimal increments or changes. It has been compared to the process of petrifaction, in which every particle of the vegetable substance is replaced by an exactly equivalent particle of mineral substance, so that it is often impossible to distinguish one from the other, the minutest structures and even the color being exactly reproduced. In general the movement is in the direction of higher types of structure, having greater differentiation and more complete integration of their parts. And structures once formed must either change organically and move onto higher stages or succumb to the pressure exerted by surrounding dynamic influences. For there is no such thing in nature as absolute rest. Yet, the movement never goes backward, retracing the steps that it has taken; for the loss of any structure that has been acquired can take place only through the crowding out or extinction of the organisms possessing such structure, which is always done by the rise of other more vigorous organisms competing successfully for the means of subsistence. Nor is decadence ever universal. If it is going on in one place, a corresponding progress is going on in others and thus far the loss has always been more

than made up by the gain; and the series has thus far been and still remains an ascending one.

The main point, however, to be emphasized in connection with this process, is the fact that it is from the fusion of unlike elements that progress results. This, as well as synergy, is in the highest degree creative, because from it there results a third something which is neither the one nor the other, but different from both and something new and superior to either. But these unlike elements must possess a certain degree of similarity so as not to be incompatible and unassimilable. In other words there must be cross fertilization and not hybridization. For, while all cultures are supposed to be assimilable, there are still some which seem to form an exception to this law. They are assimilable theoretically but not practically. In short, the one strain has so little potential energy that it produces no appreciable effect on the other, while the higher of the two immediately overwhelms, engulfs and absorbs, or destroys, the lower.

We now come to the third and last mentioned operation in the process—systematic branching. Not only has science discovered one great law of evolution applicable to all fields of nature but it has discovered that the method of this law is everywhere and always the same. In brief, science reveals to us that at everyone of the culminating points in the process of evolution a new direction is given to the whole scheme by the appearance of a new product with its added attributes and that the course pursued is zigzag. The original philum, as it were, attains its maximum development and then gives off a product that carries the process of evolution on until it in turn gives birth to a new product, which repeats the same history and so on indefinitely. Each successive product, moreover, possesses attributes which enable it better to resist the environment and thus constitutes a form of development, or structural advance. The course is perfectly homologous to the stem of a sympodial plant which consists in a series of branches each of which has appropriated practically all the energy of the plant. For the differential attribute which each product possesses, in addition to those of all before it, immediately becomes paramount, and the antecedents sink into relative insignificance. Each product with its concomitant attributes is thus a true sympode and the march of evolution may therefore be termed sympodial. By way of further explanation, it may be remarked that the vegetable kingdom probably presents the

most clearly defined system of sympodical branching. In this system the main branch or the trunk, rises to a certain height and then gives off a branch into which the majority of the fibrovascular bundles enter, so that the branch virtually becomes the trunk, and the real trunk is relegated to a mere twig, or, failing of support altogether, finally disappears through atrophy. This new trunk at length in turn gives off a branch containing as before the bulk of the bundles, and is then sacrificed in the same manner as was the original stem or trunk; and the process is repeated throughout the life of the plant. The resulting series of branches of different orders is therefore zigzag and the entire process is one of true evolution, and has culminated in the great class of dicotyledonous exogenous plants which now dominate the vegetable kingdom. And looking back in imagination over the vast stretches of the past we can see the earth peopled, as it were, by vegetable forms, different in every epoch; and an image comes to us of the gradual rise, ultimate mastery, or hegemony, and final culmination of each of the great types of vegetation, followed by its decline contemporaneously with the rise of the type that is to succeed it. Moreover, we can see the rhythmic march of evolution as it has been going on throughout the entire history of the earth and the path of geologic history strewn with the ruins of fallen vegetable empires, as that of human history is strewn with the wrecks of political empires and decadent races.

So much for the law of evolution with regard to its general application. We are now to ascertain how it operates on the human plane. As we have already seen each plane of existence constitutes not only a domain of natural phenomena produced by a special class of forces acting in conformity with uniform laws, but it also constitutes a fresh base of operations for further evolution. Further, we have seen that the forces obtaining on each plane are antithetical and mutually constructive in character. So it is on the human plane. Here the contending antithetical forces at work are the collective desires of associated men. They reside in the individual, but become social through interaction, cooperation and cumulative effects. They are what the psychologist terms psychic forces which are really but so many manifestations of cosmic force. For, in the final analysis, they are but so much force withdrawn from the physical world and stored up in the brain and nervous system of man in the form of psychic energy. They are motives which impel to action, and it is this

that gives them the character of force. Action is certain to follow unless prevented by some physical obstacle or by other motives that antagonize it and produce a state of psychic equilibrium; and the conservation of energy and the correlations of forces are as applicable to them as to the physical force of nature.

But desires in addition to being forces are also conditions of awareness not only of self but of some need, real or fancied. Further, they are sensations and must be regarded in the nature of pain; for the activity they cause is always expended in removing the restraint; and until this is accomplished the sensations continue to be of a disagreeable nature. Hence, the whole trend of existence on the human plane may be described as a grand movement from a pain economy to a pleasure economy.

Again, desires, like the physical forces, obey the first law of motion, or heredity, and endeavor to continue in existence what has already been brought into existence and in so doing strive to pursue the straight path on which they started; which, if allowed to go on uninterrupted, would result in perpetually increasing the quantity of human life without affecting its quality. But this condition is influenced very materially by two opposing conditions —differences in environment and the ever increasing multiplicity in numbers, the immediate effect of which is scarcity in the things that men desire. And scarcity results in the conflict of interests and universal and perpetual strife between man and man.

It is to be remembered, however, that function is the end in nature, and function is impossible in the absence of structures. Structures, again, can be brought into existence only through the operation of synergy. Hence, in the social world, as in other fields, there must be collision, interaction, subdivision, compromise, unification and final cooperation resulting in an equilibrium of forces, the entire drift being towards economy, conservatism, and the prevention of waste in the exercise of function.

The process necessarily implies the original homogeneity of mankind followed by a long period of differentiation, resulting in a high degree of heterogeneity in respect of which all recognized authorities on the early life of the human race are in perfect agreement. Whatever differences of opinion may exist regarding other matters, all are agreed that in those times anterior to all historic records, and before any of the early civilizations existed, the earth was peopled with a great number of entirely different races, tribes, groups, clans and hordes, each striving to maintain an

existence. Some had worked off farther and farther into regions and remained wholly unmolested and continued their half animal existence, unchanged by their contact with other races. Indeed, some such exist today, and it is from a study of them that we gain an insight into the primitive life of man. But those who did not migrate far, soon came into contact with others on account of the rapidly increasing number in all the groups. They differed in language, custom, arts, cults, religions and regarded one another as so many different orders of beings, every race became the bitter enemy of every other and therefore there was no recourse other than that of war.

Hence, there began the struggle of races out of which certain races emerged as the conquerors and certain others as the conquered. If one race devised superior weapons or possessed greater military skill, it became a conquering race. At the lower stages of the process, there was practical extermination of the conquered race. But gradually head-hunting, cannibalism and the extermination of the conquered gave way to different forms of slavery and to this is due all value in the economic sense. Under the sting of the lash, man acquired the capacity of sustained labor, the end of which is production, wealth, and the mainspring of all modern activity. To slavery, also, is due another important development, viz: the origin of individual property, and the right pertaining to it. The first form of individual property consisted largely of slaves. It began with women used both to gratify lust and also to wait on the military chief, which was later extended to men who could surround him with all manner of luxuries and do his general bidding. The second principal form was that of land. The leading warriors of the conquering race lay claim to all the territory occupied by the subject race and proceeded to divide it up among themselves, assigning boundaries to the share of each individual. This assumed more complex forms with successive assimilations and ultimately created the latifundia and the feudal fiefs. And out of these grew all other forms of property and the ruling classes came into possession of flocks and herds, castles, vehicles, tools, weapons, and everything that could minister to a life of ease and domination. Another and contemporaneous development of amalgamation through race conquests was that of the caste system. And with caste came the leisured class without which it would have been impossible for the world to make any considerable advance. For in the

leisured class the struggle for existence was eliminated, which necessarily left a large surplus of psychic energy to be expended. Moreover, each successive assimilation infused fresh vigor into the social stratum and the qualities thus acquired diffused through the privileged classes and thence down into the less favored ranks to leaven the whole.

The next step in the process of race amalgamation through conquest, was the gradual mitigation of the caste system to a state of individual, social and political inequality. Before the conquest the contending races were thoroughly heterogeneous. But now they spoke different languages, worshipped different gods, practiced different rites, performed different ceremonies, possessed different customs, habits and institutions, and the conquered race would rather die than surrender any of these. And while the conquerors professed absolute contempt for all these qualities in their subjects, they were correspondingly powerless to transform them into their own.

The third step was the substitution for purely military subjection, of a form of law and the origin of the idea of legal right. The difficulty, caste, and partial failure attending the constant and unremitting exercise of military power over all the acts of the conquered became a serious charge upon the conquerors. At first the latter naturally persisted in meting out punishment to all, offenders against their authority; but such personal government at length grew wearisome and a change was demanded. It was found that authority could be generalized in the person of the military chiefs and that certain classes of rules could be adopted for the repression of certain classes of acts. This was found to be economical and larger groups of conduct were made the subject of general regulation. This economical policy was continually extended and a general system of rules ultimately though gradually worked out and a firm foundation was thus laid for government by law.

The fourth step was the origin of the juridical state under which all classes have both rights and duties. With the intense polarization of interests prevailing, the conquering race found it difficult, or impossible to frame laws to suit all cases. It could not understand the conquered sufficiently to be successful even in securing its own interests. In short, the conquering race needed the assistance of the conquered in framing and carrying out measures of public policy. This meant the establishment and

maintenance of order, the only basis of which was the creation of correlative rights and duties under the law. This in turn could be secured only through concessions on the part of the master race to the subject race and the enlistment of the best elements of the latter in the work of social reorganization. So the basis of compromise was at last reached—concessions on the part of the conquerors in exchange for the assistance from the conquered—the immediate result of which was the juridical state.

The fifth step consisted in the cementing of the mass of heterogeneous elements into a more or less homogeneous people. Concession and resignation, compromise and mutal assistance now proceed apace. Animosity abates and toleration increases; and a number of potent agencies now combine to accelerate the process. The individuals of both races have before them the problem of maintaining their existence and possess the ambition to accumulate wealth. Each needs the help of the rest. Hence, the division of labor takes place, ramifying in all directions regardless of race lines; and business organizations and combinations are formed, based on character and not on military distinctions. But interest is not the only principle. There are many others such as the many ways of pursuing pleasure, knowledge, art, science, and philanthropy through voluntary organizations based exclusively on personal qualities. Finally, the time arrives when the state needs the physical and moral support of the lower elements against alien invaders threatening to overrun and destroy it. Hence these elements, including the numerous subject class, become the main dependence in such crises. Two other strong unifying sentiments also now arise—gratitude on the part of the ruling classes and pride on the part of the subject race; and this supplemented by a cross fertilization of cultures through race miscegenation, which has all the while been going on, results in a new social structure—a people.

We now come to the sixth and last step in the process—the rise and development of a sentiment of patriotism and formation of a nation. All past animosities are now forgotten and a national sentiment begins to form; a deep-seated affection grows up both for the people and the territory and individuals come to feel that they have what they call a country-patria, patrie, Vaterland. The sentiment that inspires this affection is called patriotism. It works the disappearance of the last vestige of the initial social annalism and means that the prolonged race struggle is ended.

In a word, one more finished product of social synergy is presented to the world—the nation.

The foregoing meager sketch, however, merely describes the earliest and simplest form of social integration under the principle of synergy, whereas all the known historical examples are complex or compound. In these cases the process has to be gone through over and over again. But neither the growth, the multiplication, nor the perfectionment of social structures involves any dynamic principle. They simply represent a condition of equilibrium of conflicting social forces. Yet, as there is no such thing in physics as absolute rest, neither is there any such thing on the social plane as absolute stagnation. There must be movement, change, progress, and this can be brought about only through change of type in structures. Social structures once formed, must, as in the physical world, move on to higher stages, or succumb to the pressure exerted by outside dynamic influences. But, if it were left to the initiative and the deliberate and conscious action of mankind, progress in this direction would be impossible. Fortunately, there are great cosmic unconscious principles that work for progress against the eternal resistance of established social structures. By sheer force of circumstances by pushing out of boundaries to avoid overcrowding different races charged with potential energy locked up in the varied cults and customs, meet in conflicts, whereby all these divergent idea-germs are first hurled promiscuously together and then bonded in the manner described in our sketch of the amalgamation process. Without destroying the type of the structures produced by social synergy, a differential change is constantly taking place whereby they are perpetually changing in type and evolving into new and higher types of structure. The process is creative because from the fusion of unlike elements there results a third something which is neither the one nor the other, but different from, and new and superior to, either.

Hence, whatever may be our sentiments regarding the horrors of war *per se*, we are forced to the inevitable conclusion that it has been the chief and leading condition of human progress. It has been the blind, unconscious means by which nature has achieved the grand structure we term civilization. To quote a well-known text-book on sociology, Dealy and Ward:

> This is perfectly obvious to anyone who understands the meaning of the struggle of races; when races stop struggling, progress ceases. They want no progress and they have none.

For all primitive and early, undeveloped races, certainly, the condition of progress is a condition of social stagnation. We may enlarge to our souls, content on the blessings of peace, but the fact remains as stated, and cannot be successfully disproved.

'As regards the more civilized races this much must be admitted: The inhabitants of southern, central, and western Europe have led the civilization of the world ever since there were any records. They are and have been throughout all this time the repository of the highest culture, they have the largest amount of social efficiency, they have achieved the most, and they represent the longest uninterrupted inheritance and transmission of human achievements. The several nations into which this race is now divided are the products of compound assimilation of a higher order than that of other nations. As a consequence of all this, this race has become the dominant race of the globe. As such it has undertaken the work of extending its dominion over other parts of the earth. It has already spread over the whole of South and North America, over Australia and over Southern Africa. It has gained a firm foothold on Northern Africa, southern and eastern Asia, and most of the islands and archipelagoes of the sea. It is only necessary to understand the changes in the map of the world to see this. Much of this has been peacefully accomplished, but whenever any of the races previously occupying this territory has raised any obstacle to the line of march it has not hesitated to employ force or resort to war. Certain tender-hearted persons have almost always uttered a faint protest against it, but it has been utterly powerless to stem the current. Indeed, the whole movement by which the master race of the planet has extended its dominion over inferior races differs not the least in principle from the primitive movement described in the last chapter (Social Karyokinesis, under Social Statics). The effects are different only because of the great disparity in the races engaged, due in turn to the superior social efficiency of the dominant race.

We have now reached the point where we may contemplate for a moment the vast and bewildering multiplicity in the human races which we can note today. They may be regarded as but so many trunks and branches of what may be called the sociological tree; and the manner and method of branching are strictly analogous to that obtaining in the plant and animal kingdoms which we know as sympodial. The beginning of the process is of course lost in the obscurity of ages of unrecorded history. But when the light of tradition and written history finally opens upon the human races, we find them engaged in a great struggle. Out of this struggle new races were born. These in turn struggled with other races and out of these still other nations emerged, and

so the process continued down toward our own times and within the general line of historic development until the great leading nationalities of today—French, English, German, Slavic—were evolved. And everyone of these races from the advanced nationalities just named, back to the barbaric tribes that arose from the blending of hostile hordes, is simply an anthropologic sympode, indeed we find a most remarkable parallelism in the phenomena we popularly characterize as the rise and fall of nations or empires, and the rise and fall of the great types of life in geologic history. Moreover, we see races and nations, like breeds and species, overgrow themselves and disappear. Peoples become overspecialized and fall an easy prey to the more vigorous surrounding ones. Races and peoples give off their most highly vitalized elements and are transplanted to new soil, leaving the parent country to decline or to be swallowed up. But the process never reverses itself. Social decadence is never universal. If it is going on in one place corresponding progress is being made elsewhere, and thus far the loss has been more than made up by the gain. In society and in the human race, generally, the series has been and still remains an ascending one and the rate of development is being constantly accelerated.

And here a brief résumé of the recorded history of civilization would seem edifying. First we see the two contemporary, already age-hoary civilizations of Egypt and Assyria emerge from the mists of antiquity, both exhibiting a high degree of national development and possessing political, religous, juridical and industrial systems, all of which systems were based on and grew out of their military systems. Persia then takes up the scepter, and after a brief but meteoric career of conquest, in the course of which she disseminated the then existing culture throughout many new regions of the world, yields it to Greece. Greece in turn performed unprecedented feats of military prowess and bequeathed to the world an unequalled literature and art, laid the foundation of philosophy and science, and gave the world its first universal language. Rome then took up the sway, became mistress of the world and contributed a most effective system of law, which was in fact a perfect model of absolutism. This united the ancient world in an organic whole, paved the way for the spread of Christianity and thus laid the foundation of all future history. After Rome, came the Germanic deluge inundating everything as it came. All seemed lost; but as a matter of fact all that was valuable in the accumulations of antiquity

remained unharmed and became the possession of later ages. After a thousand years of struggle and darkness the beneficial effects gradually became apparent.

The scene of civilization had simply shifted from the south to the north of Europe, but with the added result that new energy, new vigor, new productive power and new ideas had been infused into the general social stratum and new institutions built up. A change in masters gave woman a much higher social position. It gave us a very high idea of personal independence and of the value of the individual man as compared with the state. It gave us all the elements of free constituitonal government—the public assembly, the elective monarchy, and a self-developing system of law. Today the Anglo-Saxons are in the ascendant and the great system of free government which they have built upon the foundations laid by the German barbarians is gradually but surely making the conquest of the world.

And what of the future? Is it only through war that further mutations in the evolution of society are to be brought about? Must men go on struggling forever? Will society eventually become self-conscious and capable of devising its own means of keeping up the difference in potential? The answers are yes and no, of course, according to the point of view. It may well be that certain forms of social assimilation, late derivative, pacific forms, such as immigration, that have already begun to operate in advanced societies, may ultimately supercede the original spontaneous natural method. It may also be well that the one great line of social evolution has well-nigh reached its term in the direction of forcible consolidation and that an era of peaceful rivalry and friendly emulation is about to be inaugurated. But it would certainly seem that gradual mitigation of the law of physical struggle is all that can be hoped for. For the evident goal toward which civilization is moving is the greatest good for the greatest number; and when we contemplate the present distribution of the above-mentioned commodity in the world, individuality, racialism, and nationality, it becomes self evident that such an economic basis is indeed far from crystallization. We are therefore forced to the inevitable conclusion that men must continue to struggle and will cease to struggle only when the highest type of man shall have gained dominion over the lower types of man just as he has gained it over the animal world—the mighty cataclysm at present convulsing the world being but a mere mutation in the process.

Conduct of the March.

By Capt, C. D. Herron, 23d Infantry.

IN MARCHING units larger than a company, the usual way is for some mounted officer to regulate the hourly halts; as to all other details the commander of the leading company suits himself. Or, he leaves it to his leading guide, who in turn leaves it to the major's horse. For the horse, this procedure does no harm.

Once in a while the commanding officer turns out and watches the column plod by, but who ever saw, in the dust or the mud at the tail of the column, one of his staff officers getting a little real evidence as to the conduct of the march?

Such a thing is as rare as a dead cavalryman on a battle field. Yet it would be hard for a company commander to imagine any happier use for a staff officer. The current method is to remedy defects in the march *after* this effect has made itself manifest in the condition of the men, which is working from the wrong end. The commanding officer should have some one in the column to remedy defects *before* they manifest themselves in fainting, staggering men.

For the following ideas on marching, I am in the main indebted to the Commanding General of the 6th brigade at Texas City, Texas. The theory is, that for a marching command, there is for each day and hour of the march a particular "economic rate of march," deviation from which wastes either time or energy. Too slow a march wastes time; too rapid a march wastes energy.

It may be taken for granted that the command does not want to loiter on the road, and does desire to get into camp at an early hour. On the other hand, the man who marches at top speed, under a July sun, with splitting head, aching muscles and blistering feet, curses bitterly, though silently, the man who sits in a comfortable saddle and is responsible.

The point is to find and hold the particular pace that fits the road, the weather, the size and condition of the command. In general, it may be said that for a man of average height, the rate of march should be from 112 to 116 steps per minute, with outside limits of 108 and 120.

The pace-maker should be a non-commissioned officer of some

experience; he should check by the watch, every five minutes, his rate of march. His place is at the head of the column. The commissioned officer directly responsible for the pace should be, during *the entire march* with the last organization, and he must have orderlies for communication with the pace-maker.

Though a watch is not a part of the equipment of a non-commissioned officer, a first-class man will have one. A man who does not own a watch is one to whom time does not mean much.

An officer is not often a success as a pace-maker. His imagination works too much and his feet work with it.

The most demoralizing influence upon a pace-maker is an ambitious leading company, pining to "show 'em" and shouting "Let's go." It is particularly difficult to resist this mode of attack, especially when the lieutenant in command of the leading company emits a few sarcastic remarks.

The company should be kept back 5 to 10 yards behind the pace-maker. Even if there is no conscious attempt to influence the pace-maker, he will, if close, be constantly impelled to take the cadence of the leading squads. For, in a company marching easily and at route step, little groups of 8 or 10 men get into step with each other and march so for long distances. The tall men at the one end of the company march at, perhaps, 110; the short men at the other end at, say 120. If the pace-maker (of average height) is close and the tall men in the lead, they tend to pull his cadence of 116 down to 110. And the reverse with the short men in the lead and at the heels of the guide. Wherefore, put the pace-maker well ahead. And keep the mounted men out of his way.

Now as to the officer who controls the pace-maker. That officer should be, for the whole march, with the last organization. He need not necessarily go on foot. Perhaps it is better that he should not. For he need not and should not pay the slightest attention to his own sensations. Let him look to the men in ranks, for on them the signs of good or bad pace are writ so large that even he who rides may read. And they appear long before the signs of physical distress.

If the pace be too fast, the ranks open up and all distances increase; the files on the side of the squad away from the guide hang back; silence reigns and there is an undescribable bobbing up and down of heads that means no one is in step with any one else, a sort of "every man for himself and the devil take the hindmost."

The principal signs of too slow a pace are: weaving about from one side of the road to the other; frequent checks in the column; closing up of the ranks and the swinging ahead of the side of the squads away from the guides.

When the pace is right, the ranks keep their proper distances; the men on the flank of the column are neither ahead nor behind the guides; little groups of one or two squads get into step and keep so; the tall men do not loaf, nor are the short men so extended that they have no chance to favor a strained muscle, or an incipient blister. Such a march consumes at the economical rate the energy of the command.

This economic rate is, for the first hour out of camp, rather a slow one. By the second hour, the stiffness and lameness will be well worked out and the pace should be increased two or three steps a minute, at which rate it can stay for about three hours. After that the gait should be cut about two per minute for each hour of additional marching.

After poor pace-making, and only second as a means of harassing, annoying and man-handling a command, comes the practice of marching organizations with fixed and invariable distances. Distances between organizations are provided by drill regulations that a column may have elasticity and the individual some comfort. But as often as not all deviation from normal distances is strictly forbidden and the column becomes as rigid and inelastic as it would be without distances. A favorite excuse for this is the plea of "marching into battle." When it comes to that, if the organizations want to get there, they will trample on the heels of those in front; if they do not want to get there, peace practice in marching closed will not enter the question. If a proper pace is set, lagging companies will be rare, and the individual company commander can be called to account. On any march in time of peace, organization commanders should be allowed much latitude as to distance, except perhaps in the case of a particular organization that habitually delays the column behind it.

Finally, the hourly halts. These exercise a powerful influence on the temper of the command and should be scrupulously observed. Frequently in maneuvers, no halts at all are given for the first two or three hours; again at the end of a day's march, the last halt before going into camp is omitted because some fool within earshot of the commanding officer shouts "Let's go," and his companions weakly keep silence.

The rest period is supposed to be of ten minutes duration. It might shock and surprise many officers to hold a watch and find that ten to twenty per cent of this precious time is wasted. That is, due to orders, men stand in the road from one to two minutes of the ten. Even where the time is not used in stacking and unstacking arms, men frequently stand in the road for a full minute after the command "Fall in" and before the "Forward." This latter waste of the period is bound to occur if regimantal, or higher commanders give the command "Fall in" for simultaneous execution. In a large command, the battalion commander, from his horse can see far enough ahead to judge within ten or fifteen seconds of when his battalion ought to fall in. If the battalion commanders are allowed to halt and start their own commands, the results would probably be a maximum.

The closing of the files in a company before falling out is a mistake. It not only consumes the rest period of the company, but is perfectly useless, for within five minutes after the next start, each man will have again what he regards as the proper marching distance, which is often not forty inches. If on halting each organization closes up within itself and upon the organization in front of it, the results in a division will be that the last company marches about five minutes after the leading company has fallen out. If it fell in again with the leading company, the last company would stand in the road about five munites while the column took its normal elongation for marching. Let officers see to it that there is no transition period between the real march and real rest. Everything should be one or the other.

If officers only realized how little is gained by hurrying a command, there would be less of it done. For instance, in moderate weather, 116 steps of say 32 inches, the marching step of a man of average height, may spell comfort to a command. If so, an increase to 120 means strain and discomfort and this increase adds at the end of 50 minutes a measly 533 feet to the march.

It should also be borne in mind that when the tall men in the company are doing 120 per minute, the short ones are doing 135

The proper place for the officer who supervises the gait is at the tail of the column, be that column only a company.

We all know that "a walk at the head of the column is a run at the tail."

The Militia Pay Bill.

By Maj. John McA. Palmer, 24th Infantry.

THE legitimate object of the so called militia pay bill is to make the organized militia of the several States available as a military force which the Federal Government can use in war to reenforce the regular army for general military purposes.

Under modern conditions, wars are short and decisive, and it may therefore be taken as axiomatic that the time has passed when any nation can safely rely upon levies of raw volunteers to be organized into armies after the outbreak of hostilities. Such improvised forces were used in the American civil war and ultimately attained great efficiency, but this was possible only because our enemy relied upon the same policy, and we were able to begin military operations without an army because our enemy likewise had no army.

The history of the civil war shows conclusively that it takes more than two years, even under the full stress and energy of war conditions, to convert raw levies into efficient armies, and it shows equally conclusively that until this conversion is complete, there can be no decisive military action. But none of our possible enemies of the future will rely upon improvised armies, for the present political and military organization of the world is such that all the great powers can develop their maximum military power in a few weeks. It is obvious, therefore, that a rich and powerful nation that requires a year or two years to get ready, can be no match even for a smaller nation, if that smaller nation can develop its full military strength in a month or six weeks.

We are fond of speaking of our capacity to raise an army of a million men. We undoubtedly have this capacity, but under present conditions, we will not be able to accomplish it until some months after the termination of any serious war that is within the bounds of human possibility.

MILITARY RESOURCES AND MILITARY POWER.

There is a great difference between ultimate military resources and effective military power. A nation's ultimate military

resources are measured by the total number of able-bodied citizens capable of bearing arms, but her effective military power is measured by the number of trained soldiers which she can assemble in time to meet a given military emergency. In short, *Time* is the dominating factor in the equation of power, whether we be speaking of mechanical power or of military power. Our ultimate military *resources* are much greater than Germany's, but in one month Germany can develop ninety times as much effective military *power* as we can develop in the same time. Germany can develop and deploy her maximum military power against the united front of Europe in two weeks, while it would take us more than two years to develop our maximum military power even if we had no enemy to interfere with us or to disturb the operation. Or to borrow another explanatory phrase from the engineering sciences, we may say that Germany's military *efficiency* is near 100 per cent, while ours is probably less than one per cent.

THE TRADITIONAL MILITARY POLICY OF THE UNITED STATES.

But it is not necessary to adopt Germany's military institutions in order to solve our military problem. Our traditional military policy is just as sound for us as the policy of the "Nation in Arms" is sound for her. According to our traditional policy, we should have a small regular army sufficient for peace requirements and strong enough to sustain the first sudden shock of war, with means of expanding this peace nucleus into a great war army of citizen soldiers. The main difference between us and Germany is that while she has converted her traditional policy into a fact, we talk a great deal about our policy but have never converted it into an actual institution. Our regular army is not properly organized as a peace nucleus, and sound methods for accomplishing the great war expansion have never been embodied in our laws.

We have never been able to reduce our war preparations to a business-like system, and in the absence of system, our military institutions have always been hastily molded by political intrigue at the time of national crises. For this reason the chief characteristics of American military history have been extravagance and inefficiency.

WHAT OUR MILITARY SYSTEM SHOULD BE.

The institutions necessary to convert our traditional military policy into a consistent and economical system have recently been

outlined in the general staff report on "The Organization of the Land Forces of the United States." The essential features of this system are as follows:

1. The foreign garrisons necessary to hold our national outposts in Panama, Hawaii, the Philippines, and Guantanamo, must be composed of trained regulars and must be self-supporting until our Navy can secure command of the sea. They must therefore be always at war strength, for due to their isolation we may not be able to reinforce them at the outbreak of war.

2. We should have a regular mobile army at home organized in tactical divisions, capable of acting instantly as an expeditionary force in support of national policies, and strong enough to meet all military emergencies during the interval required for the mobilization, hardening, and final training of the great war force of citizen soldiers.

3. Our Coast Artillery Corps should be sufficient to care for our necessary coast fortifications in peace and to form the nucleus for the harbor-defense force that may be required in war.

4. We need a regular army reserve composed of former regular soldiers and available to expand the units of the regular army to war strength and to replace losses until raw recruits can be trained.

5. We should have a partially trained army of citizen soldiery, organized in tactical divisions in time of peace and prepared through prearranged and uniform plans to expand the small peace army into a great war army.

6. In the event of an emergency requiring greater forces than can be provided by the regular army and the organized citizen soldiery it will be necessary to organize additional forces of United States volunteers, and order to secure this force in a prompt, orderly, and ecomonical manner, all of the details of its organization should be settled in time of peace and the necessary powers determined by law.

THE RELATION OF THE MILITIA PAY BILL TO OUR GENERAL MILITARY POLICY.

The militia pay bill now pending in Congress is designed to make the organizations of the State militia available for Federal purposes and therefore is a step toward providing a force of organized citizen soldiery. It is a concrete attempt toward solving one of the essential requirements of our national military

problem and from this standpoint is entitled to most careful consideration.

THE FUNCTIONS OF THE CITIZEN SOLDIERY AND THEIR RELATION TO THE REGULAR ARMY.

But before considering the details of the pay bill, it will be profitable to examine a certain confusion of ideas with reference to the limitations and functions of citizen soldiery. Some of the advocates of the militia pay bill have argued in the press and before the military committees of Congress that the militia should be developed as a national force because it is cheaper to develop it than to increase the regular army, the presumption being that the militia, if so developed, can be effectively employed to perform functions of regular soldiers.

A slight consideration of the functions of the two forces and of their relative degrees of training, discipline, preparedness, and availability will reveal the extreme danger and absurdity of this argument. The regular army should of course be no larger than necessary, and regulars should never be maintained to perform functions that can be effectively performed by citizen soldiers, but on the other hand the peculiar functions of the regular army can never be performed by forces having the limited training and availability of our organized militia. For example, we will not be able to use citizen soldiery to garrison our foreign outposts. We will not be able to use them to reinforce those outposts promptly during periods of insurrection or disorder. We will not be able to use them as an expeditionary force ready for immediate employment over seas, and we will not be able to use them to meet sudden crises which may arise at the outbreak of war and before any army of citizen soldiery can be deployed and prepared for general military service.

It is true that the organized militia has developed greatly in the past few years, and the present writer in his experience as a government inspector of the field exercises of the organized militias of New York, Massachusetts, Illinois and Missouri has frequently been surprised at the high degree of progress attained by some organizations within the limited time available for training. But at this stage of our military development no patriotic citizen and no true friend of the citizen soldier can afford to disguise the fact that the best militia organizations in the force must receive an extended further training before they can be fit

for general military employment, and so long as the time available for training remains as brief as it now is, no improvement in organization and no stimulation through the medium of federal pay can make them other than partially trained troops. Such forces are of immense value within the scope of their proper functions of expanding the peace army on the outbreak of war, but such forces can never be prepared for instant military employment as regulars can and must be.

THE TIME REQUIRED TO SECURE MILITARY TRAINING AND DISCIPLINE.

It is the experience of the military nations of the world that soldiers cannot acquire the mental, moral and physical training necessary for immediate employment in the modern battle field in less than two years. Every German or Japanese infantry soldier may be considered as being under systematic military instruction and discipline for at least eight hours per working day or for at least 5,000 hours during his entire two-year period of service. It is doubtful if the average soldier of the organized militia has received more than 100 hours of effective training, and under the terms of the pay bill the maximum pay allowed is to go to the soldier who trains for 45 drills per year or say 270 hours in his three year enlistment. Assuming the training and discipline of the German and Japanese infantry soldier as 100%, it is probable that the average training and discipline of the American organized militiaman is not over 5% and that within the time available it cannot be raised above 20% even under the most favorable circumstances.

RECENT BRITISH EXPERIENCES WITH CITIZEN SOLDIERY.

These views seem to be confirmed by recent English experience with the territorial army. In the reorganization of the British army after the Boer War, the national land forces at home were divided into two distinct parts, an expeditionary force of six divisions composed of regulars and analagous to our Regular Army, and a territorial army of fourteen divisions composed of citizen soldiers.

The expeditionary force, like any regular army, is prepared for immediate service and is expected to meet all national requirements until the territorials can be assembled and hardened and their training completed for active service.

The territorials are organized under a definite national system. Their training is directly under the national authorities, and their hours of training are considerably in excess of the hours of training of Organized Militia. But it is estimated by the British military authorities that the force will not be dependable for general military service until after six months constant field training subsequent to mobilization. It will be available for defensive operations before that time but not for the full activity of the campaign and battle.

TRUE FUNCTIONS OF THE CITIZEN SOLDIERY.

In view of the considerations outlined above we may safely assert the principle that, however important the development of a sound system of citizen soldiery may be, such a force can never be employed to perform the peculiar functions of regular soldiers and that no matter how efficient such a force may become its development can not be regarded as a substitute for necessary increments of the regular army. Citizen soldiers cannot be effectively employed in all the operations of modern war until after a period of final training subsequent to mobilization and until the termination of that period only fully trained soldiers or regulars can be counted upon to meet national military emergencies. How long that period may be must depend upon the amount of training and discipline actually imparted in time of peace. It will also depend upon whether that training is imparted by competent or incompetent instructors and whether or not the force is effectively organized in peace as a well knit national army. But while forces of citizen soldiery cannot be regarded as substitutes for regulars in time of peace or at the outbreak of war, they are of immense value because they form the means of expanding the small peace army into a great war army in an orderly manner and long before this could be done by raw volunteers. This is a function of immense importance but from the national standpoint it is the sole function of the citizen soldiery.

CAN THE ORGANIZED MILITIA BE CONVERTED INTO A NATIONAL CITIZEN SOLDIERY?

Looking at the present state of development of our national military system in a broad way, the two salient facts are these:

1. The country needs a well organized and partially trained

force of national citizen soldiery to expand the small peace army into a great war army.

2. Throughout the United States, there actually exists a partially trained force of citizen soldiers known as the Organized Militia. This force is composed generally of excellent military material, has attained a considerable degree of efficiency, and is capable of extensive development. Its present strength is upwards of 120,000, and with its organizations filled its strength would be upwards of 300,000 men.

The practical question then is, why does not the National Government develop this actually existing force into the force of citizen soldiers which the nation needs?

The answer is that the Constitution of the United States expressly denies the Federal Government the powers necessary to accomplish this desirable and sensible object. The Federal Government is given the exclusive power to declare and wage war and to raise and support armies but it is not permitted to make an effective army out of the militia and it is not even permitted to employ it as an army for general military purposes. The trouble is not in any intrinsic defect in the militia personnel but in the deficiency of essential powers delegated to the National Government. If the National Government had the same power over the militia that the British Government has over the territorial army, it could easily convert it into an effective army of citizen soldiery like the British Territorial Army. If the National Government had the same power over the militia that the Dominion of Canada has over its militia it could make the American militia as effective a national force as is the Canadian militia. If the National Government had the same power over the American militia that the Swiss Federation has over the Swiss militia it could make it a homogeneous national force like the Swiss militia. But our Federal Government has been expressly denied these powers.

IT IS UNCONSTITUTIONAL TO USE THE MILITIA FOR GENERAL MILITARY PURPOSES.

The Constitution authorizes the Federal Government to employ the militia to repel invasion, to suppress insurrection, and to execute the laws of the United States. It does not authorize its use for general military purpsoes. *Under these limited powers,

* See opinion of the Attorney General of the United States dated Feb. 17, 1912.

it could not be used outside of the United States to enforce the Monroe Doctrine, it could not be used to occupy Mexico if such a thing should become necessary, it could not be used to invade Canada in the event of a war on our Northern frontier. It was not used in Mexico during the Mexican war because it would have been unconstitutional to use it for that purpose, and it was not used in Cuba, or Porto Rico or the Philippines during the Spanish-American war for the same reason. It is true that many militia regiments went to the Spanish-American war but they volunteered under the volunteer law of 1898, and thereby lost their militia status. Volunteers are a part of the armies of the United States and are maintained under the unrestricted constitutional power "to raise and support armies," and can, therfeore be used in any part of the world and for any purpose which Congress may authorize.

THE FEDERAL GOVERNMENT LACKS THE LEGAL POWER TO TRAIN THE ORGANIZED MILITIA AS A NATIONAL FORCE.

When it is said that the Federal Government cannot use the militia for general military purposes, enough has been said to show the absurdity of any plan looking to its development as a national war force so long as it retains its status as militia. But this is not all, for even if the Constitution had permitted the Federal Government to use the militia, it expressly withheld all of the powers that are essential to the peace training of a national military force. In plain terms, the Constitution says to the Federal Government, "You may use this force if you will not use it for general military purposes, but you cannot train it, you cannot discipline it, you cannot govern it, and you can have no vioce in the selection of the officers who are to be its instructors in peace and its commanders in war." All of these powers are expressly denied to the Federal Government by the Constitution of the United States. Indeed the permission given to the Federal Government is quite similar to the permission given to the young lady in the nursery rhyme:

"Mother, may I go out to swim?
Yes, my dearest daughter,
Hang your clothes on a hickory limb,
But don't go near the water;"

for all of the powers denied the National Government are quite as essential to the organization of an effective national army of

citizen soldiers as access to water is essential to the act of swimming.

All of these powers are exercised by the government of Great Britain in its development of its territorial army. All of these powers are exercised by the Dominion of Canada in its development of the Canadian militia, all of these powers are exercised by the Union of South Africa in its development of the New South African Soldiery, and all of these powers are exercised by the Federation of Australia in the development of the federal Citizen Soldiery of Australia. There is no effective national army in the world, whether composed of regulars or citizen soldiers, in which these powers are not exercised by the national war-making power, and in the nature of things there cannot now or at any time be an effective national force where these essential powers are denied. They are, in fact, the indispensable powers through which military efficiency and unity of military doctrine are secured. Without the exercise of these powers, the personnel of the Organized Militia cannot be knit in peace into a homogenous war force. At best it can only be a gathering of the clans, a loose league of contingents from forty-eight separate sovereignties. History is full of the weakness of allied forces. Napoleon's entire strategy consisted in taking advantage of the lack of team work in such forces, even when the number of allies was only two or three. If he could have divided Europe into forty-eight fragments he would not have dignified his operations against them with the name of war.

The immense mass of modern military forces and the speed of modern military operations require a coöperation or team work that can be secured only by permeating the entire force with a unified military doctrine in time of peace and this is possible only when the war making power is also the war preparing power. This cannot be secured by the Federal Government *requesting* each of forty-eight sovereigns to adopt its military doctrine. Each of these forty-eight sovereigns has a prior claim on the employment of the militia, maintains it for its own uses, and has its own doctrine as to its employment and training in peace.

THE POWER TO RAISE AND SUPPORT ARMIES.*

But it is a significant fact that while the Constitution deprived the Federal Government of the powers necessary to develop and

* The federal power "to raise and support armies" is construed in Tarble's Case, 13 Wallace 408.

employ the militia as a national military force, it by no means deprived the government of the necessary powers to wage war and to prepare for it in peace. It gave the new government fatally restricted powers over the militia but it conferred the "power to raise and support armies" absolutely without restriction. The regular army is maintained under this power and the volunteer armies employed in 1846, 1861–65, and 1898 were maintained under this power. Indeed, the peace training of the Organized Militia in 1898 was made available to the National Government through this constitutional power because the volunteer law of that year permitted Organized Militia units to volunteer as a body into the volunteer army, and by this act they were legislated out of the restricted militia status, and into the unrestricted federal soldier status. After this change of status they were an integral part of the armies of the United States and could be employed in Cuba, or Porto Rico, or the Philippines or any other place within the sphere of national interest, for there is no restriction on the powers to raise and support armies. Under that power, Congress can support a professional regular army such as we now have, and it can also if it chooses support a non-professional citizen soldiery army like the territorial army of Great Britain. In short, it can raise any kind of an army that national requirements may demand.

HOW THE MILITIA PAY BILL PROPOSES TO MAKE THE MILITIA AVAILABLE FOR FEDERAL PURPOSES.

Now the militia pay bill proposes to utilize the organized State militia for federal purposes by destroying its militia status under certain conditions upon the outbreak of war and transferring it to a new status under the power to "raise and support armies." Tho two essential features of this measure are as follows:

1. It proposes to give pay from the federal treasury to such officers and enlisted men of the State Militia as may qualify as to fitness for military service under such regulations as the Secretary of War, *after conference with the National Militia Board*, shall prescribe.

2. It provides that the President with the consent of Congress, in time of war or when war is imminent, or in other grave emergencies, requiring the use of troops in excess of the Regular Army beyond the limits of the United States, may by order transfer to the Army of the United States any portion of the Organized

Militia receiving or entitled to receive the benefits of this act, to serve therein for two years.

Under the first feature of the bill as outlined above, it is supposed that the Federal Government in consideration of the appropriations for pay will acquire an indirect but effective influence and control over the training, discipline and organization of the militia. The states will still retain their constitutional power of appointing the officers of the militia, but federal pay will go only to those officers who are qualified for these offices according to federal military standards. The states will continue to govern and train the militia in time of peace, but this training must conform somewhat to federal requirements in order to attain the standard of military fitness which will entitle them to pay.

Under the second feature of the measure, the constitutional restrictions upon the use of the militia are removed in so far as the paid militia are concerned, because all such militia men will upon the order of the President and the consent of Congress be *ordered* into the Army of the United States to serve in conformity with their enlistment contract for two years unless sooner discharged. They are thus removed from the militia status and become part of the national force which can be employed wherever national interests may require them.

If Congress is satisfied with the constitutionality and effectiveness of the "enlistment" feature of this bill, which in effect creates a Federal status, there can be no doubt that it will in effect restore to the Federal Government some of the powers denied it by Constitution and for the lack of which it has been powerless to develop the militia as an effective national force.

THE EFFECT OF THE PAY BILL IF IT SHOULD BECOME A LAW.

If it should become a law, a company of militia whose members were receiving pay thereunder could be ordered into the Army of the United States and sent to Nova Zembla or Patagonia if a national emergency justified it. It could be kept there for at least two years and all of its members would be required to serve such time under penalty of court martial.

Or if all of the organized militia of one of the States should qualify for pay under the terms of the bill, it would be competent for the President on the eve of war to order all of its Organized Militia out of the State and on foreign service, and upon receipt of such an order all of its organized militia would cease to be

militia and would no longer be under the control of the State authorities in any manner whatsoever.

In other words, it appears probable that the bill will accomplish the object of making the militia available for general military employment under the Federal Government in time of war, and, if this cannot be done, there can be no justification for pay from the federal treasury.

WHAT WILL THE FEDERAL PAY BILL COST?

The appropriations necessary to pay the militia under the pay will be considerable. With the present strength of the organized militia it is estimated that about $10,000,000 per annum for pay alone will be required. But as it should be the policy of the government to develop in peace all the citizen soldiery the country will require on the outbreak of a great war and as this force is estimated in the "Report on the Organization of the Land Forces," to be about 379,000 men, the ultimate pay bill if the system is successful will soon be upwards of $24,000,000 per annum.

BUT IS FEDERAL PAY NECESSARY IN ORDER TO SECURE A CITIZEN SOLDIERY?

But is federal pay for the State militia necessary in order to secure a sufficient and effective citizen soldiery? An examination of the military forces of other English speaking nations will throw an interesting light on this question.

The United States with a population of about 92,000,000 has a force of about 122,000 organized militia, or 1,324 citizen soldiers to each million of population.

The United Kingdom with a population of about 41,000,000 has in its well organized territorial army 317,000 citizen soldiers none of whom are paid. This means 7,770 citizen soldiers to each million of population. If the young men of the United States would enlist in the same relative numbers as the young men of Great Britain we could have a citizen soldiery of 714,622 men or nearly twice as many as we need.

The Dominion of Canada with a population of a little more than 7,000,000 has a national citizen soldiery of about 64,000 men, none of whom are paid. If our young men should enlist in the same relative numbers we would have a force of about 826,000 men or more than twice as many as we need.

The Federation of Australia with a population of about 4,455,000

has a partially trained citizen soldiery of about 88,000,* none of whom are paid. If our young men should enlist in the same relative numbers, we would have 1,802,651 citizen soldiers or about five times as many as we need.

Why is it that where one young American enters the organized militia, more than five young Englishmen enter the territorial army, more than six young Canadians enter the Dominion militia, and more than fifteen young Australians enter their national citizen soldiery? It cannot be solely because our men are not paid, because neither the Englishman, the Canadian nor the Australian is paid for the time he gives for military training. Can it be because the young American is less patriotic than his fellows of the English speaking race, that we must pay him to perform a duty that they perform as a free and voluntary patriotic service?

If the answer to this question should reveal some fundamental defect in our military institutions, then the correct solution of our problem of citizen soldiery lies in correcting that defect and not in paying men to serve in spite of the defect. In this way we may secure not only a better institution but may avoid the enormous expenditures that the pending pay bill will involve.

THE REAL REASON WHY SERVICE IN OUR ORGANIZED MILITIA IS NOT POPULAR.

Now there are many reasons why service is more attractive in the forces of Great Britain, Canada, and Australia than in our organized militia, but the chief reason and one sufficient to account for the whole difficulty is this. If a young man enlists in the territorial army of Great Britain, he enlists in a definitely organized force which can be used for war purposes only. In other words he enlists to be a soldier in war.

But if a young man enlists in the organized militia of Illinois he does not enlist in a national force, and he does not enlist for war service only. He must enlist in a force which is frequently employed in the aid of the police power of his State. In other words he must be a part of the state constabulary as well as a soldier, and he must be ready for strike and riot duty which are not connected in any way with preparation for war or national defense.

*This was the number before compulsory service became effective. Under compulsory military service it is expected that the force will attain a strength of 250,000.

Of course this aspect of the question directly repels thousands of young men just the kind who would make the best soldiers. Nor does the repulsion extend only to men with direct union affiliations, for many young men who have no such affiliations would prefer not to enter an organization which must be employed against their fellow citizens in times of public disorder. This is not because they are in sympathy with public disorder but because they prefer not to be policemen. There are thousands of young men in the United States who are unwilling to serve in the militia for this reason but who would gladly serve in a national force to be employed in war only.

In other words if we use the organized militia as our citizen soldiery we are creating a force with a double function, a state police function and a federal war function. Obviously in the limited time available for training, this force cannot perfect itself in both functions, and obviously this force can never attract all of the young men who want to volunteer to prepare for national defence. This is true because in the nature of its organization it can only use those who are willing to perform the double function and therefore all of the soldierly young men who want to volunteer for war service only are permanently excluded from the force. This is due to an inherent *defect* of the system, and no provision of federal pay can correct it.

THE BETTER SOLUTION PROPOSED BY GENERAL UPTON.

Now let us consider the more scientific solution of the problem proposed by General Upton in his "Military Policy of the United States." He proposed to form a federal citizen soldiery with a battalion of infantry in each congressional district, organized for war purposes only and maintained not under the militia clauses of the Constitution but under the unrestricted federal power "to raise and support armies." Such a force would be like the territorial army of Great Britain. He also proposed to leave the militia, as the Constitution evidently intended it, as essentially a state force and not to be considered in national war plans at all except for the limited and local uses authorized by the Constitution.

This would abandon the organized militia as a national military institution but would not necessarily abandon its present military personnel, for on the formation of the new force those of the organized militia who want to be real soldiers could pass into the national force and those of the organized militia who want

to be militia or militia-constabulary could remain in the militia.

In the original appointment of officers in the new federal force, a preference would of course be given to officers of the organized militia who elect to transfer from the state force to the new federal organization.

With the militia thus restricted to purely local duties within the several states, the composition and organization of the force within each state could be adjusted to actual requirements and would be purely a state question in which the Federal Government would have no interest. Under the militia pay bill, the states are to be encouraged to maintain greater organized militia forces than they actually require with the prospect of having the whole force *ordered* into the federal army and ordered out of the country at a time when it might be urgently needed for local defense or for the maintenance of public order.

Indeed, it was probably to prevent this very contingency that the founders of the government deliberately and advisedly restricted the federal powers over the militia. They evidently intended to preserve the militia to the states for local uses and to prevent its employment as a national military force.

On the other hand, the military grants proper, that is, the power "to raise and support armies" and the power "to provide for the government and regulation of the land and naval forces," were conferred upon the new federal government without any restriction whatever.

THE ORGANIZATION OF A NATIONAL CITIZEN SOLDIERY.

The national volunteers recommended by General Upton could be scientifically organized by Congress as a war force without consulting forty eight separate sovereignties that, under the Constitution, have nothing to do with the conduct of war. The battalion in each congressional district would be a real school of military training to attract all of the patriotic young men in the district. The appointment of its officers would be determined by federal laws and could be based on efficiency and capacity to instruct.

Service in this battalion would practically never involve strike duty or other service in aid of the civil authority, because the battalion being a federal force could not be so employed except on the call of the state authorities upon the Federal Government, and upon such a call the Federal Government would naturally

employ its paid regulars before calling upon the citizen soldiery. Furthermore if Congress should restrict it to war service only it could not be used for any other purpose.

Having a battalion in each congressional district each group of three would form a regimental district, each group of three regimental districts would form a brigade district and each group of three brigade districts would form a division district. In each division district the cavalry, field artillery, engineers, sanitary units and other necessary auxiliaries of the divison could be directly organized by Congress without any conflict with or restriction by state authority. In other words, the force could be organized and trained under a uniform national doctrine and could be modified from time to time as national interests change. This will, of course, always be impossible in a force over which the powers of the government are limited to advising forty-eight separate states to form their local forces in a manner that is generally contrary to their own prior interests.

Such a force would also protect the individual interests of the citizen soldiery in a most important particular. The American volunteer who is willing to risk his life in the national defense is entitled to trained leadership in war, and no one should be entrusted with the command of American soldiers who is not trained for that responsibility in time of peace. In a national force Congress could restrict initial appointments to qualified candidates and could provide for an equitable system of promotion based upon experience and ascertained merit. This would open the highest military rank to ambitious and competent members of the force but would eliminate the demands of politics, intrigue, and state expediency.

In many of the colleges and universities throughout the country, thousands of young men are receiving a military training that should qualify them for service in any popular military force that is based on the idea of utilizing our potential military resources. Very few of these young men are utilized in the Organized Militia. They are well prepared for such service but are generally unwilling to enter a competition for recognition in a force which is primarily a state constabulary and only secondarily a national soldiery.

Again under the peculiar conditions of militia service the facilities for training are now restricted almost entirely to the young men of the cities and towns. In a national force thousands of young country men could be utilized just as they are utilized in the

English territorial army or the Swiss national militia. Our national military force would thus become a nation-wide educational institution and would give a training in discipline and soldierly self-reliance without the additional and unnecessary burdens and annoyances that must always discourage thousands of enlistments in a semi-constabulary force like the present organized militia.

It therefore appears that while the militia pay bill is one means of securing a national citizen soldiery, and is to that extent a commendable measure, an examination of the facts will reveal that it is the most expensive and the least effective means of accomplishing the object in view. If adopted, it will always be an expensive, incomplete, and unsatisfactory solution of the problem. The organization of a national citizen soldiery under the constitutional power "to raise and support armies" will be better for the nation, better for the states and better for the soldierly personnel in the Organized Militia who are now striving to be national soldiers in spite of burdens that must always impede their progress.

Impressions of Service with the 2d Division in Texas.

By Col. R. L. Bullard, 26th Infantry.

THE freshness of the subject is gone. I do not therefore expect your rapt attention or absorbed interest; we have not always had our own. Yet the experience, from its very length, involves matter of thought and profit.

Impressions these shall be, not discussions. Great and small there have been thousands. Many are faded, lost to description, though not to personal experience. We, upon whom they fell, may not be able to take definite account of their effect upon ourselves but that they have had effect time may be relied upon to show. Until long after, one never realizes how much he has taken up by absorption.

The impressions made lie in a field of peace and not of battle, peace mobilization, camp, supply, administration, organization, arms, training, tactics (of maneuver) and men, covering not the whole of any of these subjects but touching all in spots. One notes and speaks those things only to which his especial mind is alive.

First and in general it may be said that the Division's experience though a little more real, afforded with its regular troops less basis of calculation for war than the usual maneuver camp with its irregular, our war soldier.

MOBILIZATION.

It was accomplished apparently without strain; but the force assembled (about 10,000 men of all arms) was so small, moved from so many different places over so many different railroads and in such small bodies (besides being all regulars) as to afford no man but him who directed it, any basis of judgment as to what our capabilities might be expected to be found in a large mobilization.

The distances were great, the speed and order remarkable: yet the whole, while unquestionably it could not have been done half so well ten years ago, was still no test, you feel.

CAMP.

It had been selected as a point of departure. It proved not to be such. It took a month, nay, months, of engineering and fatigue to make it a living camp. For long it was apparently the purpose and effort of authority to keep it what it was at first designed to be. But the individualism and initiative of the Americans are irrepressible. While you restrain them at one point they break out at a dozen others and are soon beyond control. At first then in the main at their own expense, afterward in some cases authorized, the troops of the 2d Division improved the existing or provided new living conveniences. Framed kitchens, tent floors and frames, baths, hot and cold water devices and wooden living shacks soon appeared and the camp was at first drawn into cantonment and now toward a post. Officers in many cases live out of camp at a distance from their organizations: a bit of garrison equipment has been added here and there: clubs have come and garrison and society clothes. It is the steady evolution of the post. One who has observed it cannot escape the conviction that the big army camp, proposed by some, where at least one division should always be held for the superior training that a camp affords, would soon be no camp at all but just a post like all the others where we now live and move and have our training.

The division camped by division units, that is, the infantry by brigades, the cavalry by regiment, etc. And here developed sadly the small view that results from our officers having been accustomed to only small organizations. Eventually the camp come to be regarded generally as an assemblage of company camps that should be allowed to grow and develop in any and all diverse and independent directions, each without regard to the other. It takes more than an order, it takes habit and service together to make a brigade or a division or even a regiment.

Tentage—how it went in wind and rain and sun! At one place only, West Point, have I seen it cared for aright and to the last requirement. There let come a wind, never so small a rain, to tear or stretch it and a chorus filled the air: "Turn out 'A,' 'B,' 'C,' 'D' Co. and loosen your tent ropes!" Imitation is needed in the army.

Over and over the long stay has impressed upon the mind how hard it is in such a camp to take a little thought. Men live so thick that even one's definite purpose not to interrupt or be interrupted by his neighbor can hardly save it.

Equally hard is it to avoid great waste of time. There is in all a sense of merely waiting that only the most determined industry can conquer.

SUPPLY.

So good as inevitably to suggest the idea that either reorganization has immensely improved the supply departments or that supply is made much easier by massing troops, or both. Under the actual conditions certainly efficiency and elasticity of supply were put beyond question. Such things as these came to pass:

Old khaki in the hands of the troops was taken up and exchanged throughout for the new cotton olive drab clothing—a breaking of custom almost unprecedented in ours or any other army.

With all apparent ease two thousand of us were taken aboard transports that had been lying unused at the docks for months, were perfectly fed and handled for a day at sea.

ORGANIZATION AND ADMINISTRATION.

The start to take the field, to pass from peace to war, showed the troops at certain points peculiarly tethered to post and garrison life.

The allowance of Hospital Corps and Quartermaster's Corps men belonged to the posts from which the troops came and such men were long, and some are still, I believe, carried as on detached service from those posts. If a regiment or a battalion of this 2d Division, independent though it was and in the field, needed another man of these, the question had to be referred back to the little post from which such regiment or battalion had come long ago, far away and now under another and entirely separate command.

The allowance for newspapers and periodicals for enlisted men seems to be made for the libraries of regular posts and garrisons for peace and home life, not for a command in the field. Therefore when the 2d Division was mobilized, this matter had to be put upon another and somewhat unrecognized basis, to the deprivation of the soldier for a long time of his books and papers, and that at a time when he most needed and would have appreciated them.

The allowance of blank forms and the distribution of general orders of the War Department, the *sine qua non* of military life and administration, were likewise long, and are partially still today, referred back to the various posts from which came the organizations making up the 2d Division.

These are small matters and do not spell ruin. But they do show our war machine in these points at least worked on peace and not on war or field service lines.

The "Manchu" law has struck a fatal blow at the regimental staff. From an honor to be sought it has come to be regarded as a pest to be shunned.

The Regimental Detachment has proven itself. It needs only a bit more of legal recognition to establish it, a paid cook or two especially to make the men happy, and a spare officer or two to command it. Its horses in the infantry, however unnecessary they may be theoretically in a large, completely organized army (which we have not), are a godsend in all our present infantry life and service and training.

Where commanders are numerous and side by side comparison is easy and differences clear, anything but sharp command means inefficiency. The long-suffering variety, even though firm does not bring the results. Officers and men, even the best, are so built. We love the gentle superior and neglect his orders; we hate the sharp one and obey him.

Sanitation may be dismissed briefly. It has left almost nothing to be desired. Some of us have been hurt and some killed, but nobody (a little license, please) has been sick. We greased the red bug and trapped and burned the fly but had to bear the mosquito. The last, fortunately for us as well as for Santa Ana and his men who preceded us in an enforced stay in this vicinity some seventy-five years ago, was harmless except for its sting.

I can think of no more uniform army experience than, when troops have had to move, to find the wagon transportation not ready with the troops. In the 2d Division, at least near me, it is so no more. A regular Saturday inspection for transportation as for troops has done it. That throughout the army we have always so strainedly looked to the readiness of the troops to move and neglected the readiness of the transportation without which they cannot move, doubtless has some explanation; I have never heard it.

ARMS, ETC.

In the Regimental Detachment's machine gun nobody has confidence. We cannot work it. It shoots a while and stops. Something has got to be done about it. The gun or its handlers must change for the better.

The motorcycle as a means of communication in marches and maneuvers—bless it! Where there are roads, it beats foot, horse, flag, flying-machine, wire and wireless. To the average man it seems to bring a surer token as being material as well as late evidence of what it comes from.

TACTICS.

Impressions here are nothing because maneuvers settle nothing in tactics. Indeed for the very torrent of words that follow on this side and on that, we always come out of one more uncertain than we went in. Nevertheless mere maneuver tactics did seem to show:—

That the control of the machine gun, with its range and trajectory those of the rifle in the hands of the men, is properly where it now is, with the commander of the men, the Colonel: and also, as being a weapon of limited and local opportunity, that it is properly not organized in units so large that the local commander cannot find place and opportunity for using all;

That the brigade commander should practically always give his orders in writing. He will have time. His command is not so small that it will be eaten up before he can write them and is so big that things go wrong if he does not write them.

That dispersion and non-frontal attack have been so dinned into our officers that you cannot get them beyond two or three men to a yard of front under any conditions, and that even turning, flanking and enveloping troops keep on turning flanking and enveloping forever in the vain belief that they can forever avoid going up against an enemy's face.

TRANSPORTATION.

The hard piece-meal work of moving a single brigade to Vera Cruz left deep this impression; that there is but one question. It is transportation.

What shall be carried in the field and combat trains and how? We have had much worry "about it and about," and still have, weighing, packing and testing over and over, always without satisfaction, because we fail to recognize one condition about it. It is this: as no two attacks can ever be, so no two marches can ever be or ever are executed alike. Each is different in its essential conditions from all others and a problem by itself. It is therefore as futile and impossible to make definite prescriptions as to what

troops shall always carry and how, in their trains on the march, as to prescribe beforehand how they are to make an attack. Principles alone, not prescriptions, can guide here.

A query still: will the United States soldier carry a pack?

PSYCHOLOGY.

It has been an opportunity for the study of men, not the psychology of war except as it was the psychology of the crowd, the same whether in peace or war, nor important except as the behavior of men is always important in the profession of their command. A few things more:

Disappointed expectation in two instances gave us marked proof of its power to damage morale even when that expectation is, as it actually here was, contrary to personal desire and hope. First, upon mobilization officers and men expected but certainly did not desire to go to Mexico. When, nevertheless, after two or three months it became evident that we were not to go, there was plainly a demoralizing loss of spirits in all. Again, when upon seizure of Vera Cruz the expected general movement thither did not follow, the same thing was again felt. Mistaken calculation, no less than hope deferred, maketh the heart sick.

Change according to environment is living. Not changing is dying. We do not know it. In Texas, though suffering in the long wait from deadly ennui, in general neither officers nor men have of themselves been ready to find relief if it involved change of habit or the doing of unaccustomed things. Under the conditions of their life the unaccustomed things, or else utter weariness, were inevitable. Left to themselves, they apparently preferred the weariness: directed, they enjoyed the new things. With excellent salt water bathing and swimming at their very doors, few, almost none, took them until ordered; then all did, with great apparent delight. Without resources of amusement in camp, they almost protested against marches; when nevertheless ordered, the marches were plainly enjoyed as well as profitable. Our greatest need is to have some one to make us do what we should.

Give them all things else, good homes, fine food, books, leisure, sport, amusement—all things but the society of women, and learn that without this last men can not long be made content.

TRAINING.

Five things were marked:

1. The added facilities that a great camp affords for all kinds of training, permanent camping, maneuvers, work with war-strength organizations by consolidation, supply and equipment of larger bodies, and opportunity for each arm to learn something of the function, powers and limitations of the others. It was my satisfaction to secure (for the first time, so far as I know, in our service) the assignment of officers of one arm to service for training with the other arms.

2. The quick disappearance of the recruit in such a camp. His wider, closer environment of trained soldiers explains it.

3. The absence in our service of all teaching of patriotism in making soldiers.

4. The endlessness of the work of training. The officer who hopes to arrange for less is unprofitable, a burden, not a burden-carrier, in the service.

5. Troop training. After you make soldiers you must make them troops, train them to act together in large bodies. Without this you have no army, no matter how many soldiers you may have trained. The 2d Division on coming together found soldiers, even regiments, but not those bodies of troops, brigades and division, in which men go to war.

Training of New Regiments.

By Major W. H. Gordon, Infantry.

THIS is not a study of the broad subject of infantry training in general, but a special study of expediency training, that is, how to combine work and time so as to produce in the shortest practicable period, workable efficiency in an organization of a given kind.

The problem presents indeterminate elements. It is not known how much time will be available for the training, and there is no given standard of efficiency to be attained.

In view of these indeterminate factors, it would seem that the solution of the problem will be found in adopting a system of training that will include the most necessary things first, that will offer the greatest promise of rapid advance towards efficiency, and that will at the same time lay a foundation upon which further progress in the future may be readily built; that is, make first an organization that can be used, then perfect it if there be additional time by perfecting the duties already taught and by adding those others which, though valuable and possessing an individual or collective application in war, were necessarily omitted from the first period of instruction; that is, we distinguish between the essential and desirable.

In endeavoring to decide on a system of training for any individual or body one should first determine what is required of that individual or body. Since our problem is the making of volunteers into Infantry, the question is: What is required of Infantry?

The Infantry Drill Regulations teaches that success in war is the ultimate object of all military training, that upon the shoulders of infantry is borne the greatest burden of battle, that infantry must have the tenacity to hold every advantage gained, the skill to master the enemy's fire, the determination to close with the enemy, and the discipline to endure the greatest hardships and losses in combat and on the march; that the duties of Infantry are many and difficult, and that modern combat demands the highest order of training, discipline, leadership, and morale on the part of infantry.

Infantry training is therefore a matter of predominant importance and it must be such as to prepare the soldier for the duties he will be called upon to carry out in war.

In deciding upon the instruction necessary to convert in a short time new regiments into organizations capable of taking the field, it should prove an aid to glance at the latest orders of the War Department on the subject of the training of the regular infantry. The orders in question are found in General Orders, No. 17, War Department, 1913. This order provides for the annual instruction of the mobile army and therefore of the infantry, as follows:

"Readiness for active service, and especially for the particular kinds of active service in which the troops are most likely to be engaged, is the objective to be kept in view in all peace training. * * *"

"To be prepared for such service the troops must not only be thoroughly instructed, but also must have a high morale, based on consciousness of ability to meet successfully all the demands of war."

"The value of an organization is to be judged by its all-round ability to take the field and to meet successfully every phase of war service."

"Study, drill and practical application form the basis of training. By study, knowledge of principles and methods is acquired; by drill, skill in the mechanism of methods * * * gained. It is by practical application that officers and men learn to adapt to actual cases the knowledge and skill they have acquired. * * * Hence, as soon as proficiency in elementary methods is attained, the applicatory system will be employed, commencing with simple problems and gradually widening the scope. * * * To this end all tactical exercises, whether theoretical or practical, whether with or without troops, will be based upon an assumed situation. * * * such exercises may be conducted at first as map problems or terrain exercises for the training of officers and selected enlisted men." * * *

"This prime immediate need of the army is correct tactical training of officers and noncommissioned officers." * * *

Under the above order it is contemplated to make use of the entire year for the Course of Instruction.

It is based on the principle that the work must be *progressive* and divides the year into two periods, viz:—

1. Garrison Training.
2. Field Training.

The first is largely preliminary to the second and is devoted especially:

(*a*) To theoretical and practical school work.

(*b*) To drill and practical instruction preparatory to field training.

The separation of the duties in the above order into two lists, Garrison Training and Field Training, based upon having the entire year for instruction purposes, is a condition inapplicable to this problem where time is limited.

All the duties listed under the two heads of Garrison and Field Training will therefore be considered together. They are:

Drill of the company and all of the units thereof.

The schools for officers, noncommissioned officers and selected men.

The preliminary training for fire action and field exercises.

Range practice and field firing exercises.

The service of security and information.

Combat and field exercises, first simple, then more comprehensive.

The drafting of orders and messages as incident of above combat and field exercises.

Map making and reading for officers, noncommissioned officers and selected privates.

Field fortifications, reconnaissance and selection of positions, and construction of intrenchments.

Marches and convoys, including practice in leaving the post equipped for prolonged field service.

Visual signaling and communicating between the elements of a command by signals and messengers.

Night operations.

Passage of obstacles.

First aid and hygienic care of the person.

Care of men and animals, including service of food, shelter, sanitation and supply.

Athletics and gymnastics, including swimming with arms and equipment.

Packing and exercises in transportation problems.

Tent pitching.

Care of arms, equipment, clothing.

Guard duty and ceremonies.

The correct training in marching is emphasized and special care of the feet and fit of shoes is enjoined.

Under the terms of this order each commander, commencing with the company commander, prepares a program showing his general scheme of work for the time allotted him and submits it to the next higher commander for approval.

Battalion commanders supervise the work of their companies and the regimental commander of the battalions, but the keynote of the order seems to be the protection of independence of function and of initiative on the part of subordinate commanders, and the insuring a scheme of instruction that will be progressive, and at the same time cover all phases of the training; give each its proper importance and combine them into a well balanced whole.

Routine administration while recognized as necessary is relegated to a position subordinate to tactical efficiency.

A mastery of the duties mentioned in the above list requires both theoretical and practical knowledge.

The first is acquired chiefly by study of the manuals, by lectures, talks, war games, etc.

The second by drill and field training.

Drill comprises skill with arms and the power to move in formed bodies. It includes drill at attention and the ceremonies, disciplinary exercises designed to teach precision and soldierly appearance and that subconscious obedience necessary to military control. It also includes extended order drill, which has for its purpose instruction in the mechanism of deployment, of the firings and of the employment of troops in combat.

Mechanical accuracy is not required in drill before proceeding to field training. As soon as individuals are able to act intelligently in drill, field training will be taken up and uniformity of drill movements as well as any additional smartness that may be desired will be gradually developed along with the other work.

The purpose of field training is to instruct in the duties incident to campaign. Combat exercises are forms of field exercises and consist in the application of tactical principles to assumed situations.

When instructing in field training, officers must be systematic and clear in their own minds as to what they wish to teach each day and therefore have thought the subject out beforehand.

The other officers and the noncommissioned officers should be informed in advance of the work for the day to the end that they may be prepared to cooperate and assist more intelligently. Also by explaining to the men the object and meaning of each exercise, before executing it, it will be found that their interest is engaged and their understanding aroused with resulting greater progress.

Each field exercise must be based on some simple tactical idea.

Individual and Company Instruction.

The old idea of turning a man into a machine by means of strict unreasoning discipline and formal drill is no longer the practice.

The commander of a military force cannot rely upon its perfection in formal drill to enable him to direct it with success against an enemy.

Now he must depend upon its training being of such a nature that each individual will apply sound principles in every emergency thereby securing unity of action.

In other words, a living organism has taken the place of a mechanical machine.

In the development of such an organism, *company* training is of first importance and forms the foundation of the efficiency of an army.

The period of training under the conditions of the problem being short, it is even more necessary that the time be largely devoted to work with the company and its constituent elements and that the instruction of the larger units be reduced; for after all work with battalions and regiments is largely a matter of training the higher commanders.

Instruction properly begins with the individual soldier, both in drill and in training, for upon his action chiefly depends success in the modern battle.

But the development and training of the individuality of the soldier is not all, the instruction must be such as to cause him to remember that he is a member of an organization. To this end it should be the practice that every drill and exercise end with some disciplinary exercise. These drills are an aid to discipline, but they must not be confounded with it; for while some drill is necessary in any scheme of instruction, it must be remembered that drill is chiefly addressed to the *ears* of the individual, and if

not kept within bounds is liable to crush out individual development and initiative. On the other hand *training* is directed to the brain of the man and makes the self-reliant and reasoning soldier; one who can be depended upon under all circumstances. Therefore the use of drill beyond a certain easily recognized point is justified only with troops of a low order of intelligence.

As this unfavorable condition does not exist in this country, training must be our chief reliance in developing soldiers, and making regiments.

The superiority of training to mechanical drill as a means of instruction is a measure of the difference in ability required of the instructors in the two cases.

Drill instruction, after once the drill book has been memorized, can be continued indefinitely on the part of the instructor or commander without any mental effort. It is necessarily a bore to all concerned, the instructor as well as the instructed. This is true of all branches of an army and the work becomes progressively distasteful in proportion to greater intelligence and frequency of repetition.

Training on the other hand can be made as interesting as any other work, or game if you please, in which an appeal is made to the intelligence. It therefore depends upon the instructor, and as only intelligence can appeal to intelligence, a good instructor must possess this quality and the industry necessary to arrange a program of work that will interest while improving.

With work of this kind, it is at once evident that the instructor in training cannot rest on the work of the past and depend on the memory, but must prepare in advance the work of each day so as to make it a new and living study or experinece to those working with him, whether in field or in the barracks.

These remarks are general and apply to the instructors of all arms. Enough has been said to point out the necessity of a good instructor for training.

With infantry, in which the human factor is the all important element, the individual man being the unit, the very highest quality of instruction is required.

The keynote to all tactical training is the highest development of the individuality of the soldier and subordinate commanders and special training in the use of the ground.

Since the company is the real school of training, the paramount

necessity of well instructed company officers, especially the captain and noncommissioned officers, is obvious.

In view of this requirement it is necessary that in the case of volunteer regiments, the training of the officers and noncommissioned officers precede the individual and collective training of the men.

Individual training has for its object the making of the best possible soldier. It should develop him in *discipline* by strengthening his character, *physically* by making him sound, strong and supple, and *professionally* by teaching him the soldier's art and the use of his weapons, especially his rifle and bayonet.

Discipline.

Modern military instruction does not attempt to turn a man into an automaton, but appeals to his intelligence and will by cultivating the characteristics of the human mind that have a military bearing. Determination, ambition, bravery, respect, energy, self-denial, cheerfulness, etc., are all capable of improvement. A man's confidence in himself is increased by training, his patriotism by instruction in his country's history and flag. Knowledge of the army's past deeds inspires future effort.

This form of discipline is the highest, the most difficult to attain, and is the most important factor in the soldier's education. Without it skill is of no avail, for what use is there in the knowledge of the soldier's art if when the enemy is met the will power to apply the knowledge is lacking?

Discipline of this nature should receive early attention in the new soldier's training, he then being in the most impressionable and receptive stage of his military career. Lectures and talks by the officers, especially the colonel and other field officers, should prove most valuable. Afterwards the discipline will grow with intelligent training and drill.

Physical Development.

This is accomplished by calisthenics, gymnastics, drill and training.

In present study when the condition of early readiness for field service is the paramount consideration, the lack of time will necessarily limit the period of special physical instruction of the recruits to that which is absolutely necessary to limber them up

and give them ability to handle themselves efficiently. Afterwards development will continue hand in hand with training and drill, especially with bayonet and combat exercises. If anything further is necessary it should be found in the brief calisthenic exercises which should he had daily in the early morning to help supple the men up for the day's work.

Professional Development.

This is accomplished by drill and training.

In the development of the individual the purpose of *Drill* is to give skill with the arms and assist discipline. It also has an important part in continuing the physical development of the soldier.

In collective work, the great value of drill is that it enables commanders to move their commands in the face of the enemy, varying their formation to suit the situation, at the same time not losing the men from hand.

In drill, whether individual or collective, mechanical accuracy is not to be aimed at. Skill is needed especially in musketry work and handling the bayonet. If there is not time for a full course of bayonet combat, insist upon the *attack*, teach the thrusts and points, let instruction in the parries and the defensive use of the weapon be put off for a later opportunity. In all instruction, theoretical and practical, keep always in view the principle that success can only be won by attack.

The offensive must be taught in practice. Hunt your man, don't let him hunt you.

Instruction in disciplinary drill will be taken up with the physical development, in the beginning of the soldier's instruction, and pushed until a working knowledge is reached. It will then be gradually improved by short, daily drills at the forming for, or dismissing from, training exercises. The drills that have for their chief object the development of technical skill should be taught by theory and demonstration, then developed by practice. During the drill period of the instruction, time can be economized by distinguishing between the things every man should know and those that need be known only by the comparatively few, that is, by the officers, noncommissioned officers, musicians, company clerks, cooks, etc.

All members of the company from captain to private inclusive

must be able to execute the drill movements, individual, squad and company; the manual of arms, understand the commands, trumpet calls and signals; know as much as possible of rifle shooting and bayonet combat; have a working knowledge of guard duty; understand courtesy and saluting, personal hygiene, especially the care of feet, and first aid; be familiar with the articles of war, the care of the rifle and its nomenclature; be able to take care of his clothing and equipment; understand how to make the pack, and be able to construct a simple field intrenchment. Training in marching must also be practiced, beginning with light loads and leading up to "mobilization" marches in which the company goes into the field fully equipped for a lengthy absence. At this time practice will be had in tent pitching, camp hygiene, individual cooking, care of water, etc., emphasis being placed on the principle that it is easier to keep well than to get well. Wagon packing should be taught and, if opportunity offers, swimming, rowing and stream crossing.

Instruction in these matters naturally comes early in the soldier's education as they are the military essentials. They affect not only his health and skill as an individual soldier, but also enable him to fit in and to efficiently participate in the team work of the whole company.

It is very important that soldiers be taught in the beginning of their military life that it is their duty to do what is practicable for ther comfort, that to neglect this is a military crime, as it usually ends in ill health or wearing out; and therefore loss to the army.

Some of the more important things that must be mastered by the few in addition to the above list include company administration, visual signaling, sketching and elementary field engineering, also patrolling.

Patrolling is placed in this class instead of amongst the things to be known by all, as it is hardly likely that the entire company would be divided into patrols. On the other hand by giving special instruction and opportunity to the brighter men with an aptitude for this work higher efficiency must necessarily result. While the company officers and the special few are being instructed in the subjects named, it will be necessary that steps be taken in addition to push the theoretical instruction, and drills too if need be, of the officers and noncommissioned officer to the

end that they may be developed into an efficient corps of instructors. This will be even more necessary, if such a thing be possible, in the *training*, the work next to be discussed, than it is in drill.

The natural instructor of the company is the captain, but if he be not a trained soldier, it will be necessary that the field officers, the major in each battalion, instruct and drill the captains and other company officers. This will much delay the work, especially if the officers have not at least the elementary knowledge contained in Part I of the Infantry Drill Regulations, the Guard Manual, the Manual of Rifle Firing, and in the paragraphs of the Army Regulations relating to company administration.

We come now to *training*, the real study and practice of the military art. So far as the individual soldier is concerned, the work falls under these heads, he is either Attacking, Defending, or performing Security (or Information) Duty.

It will make things clearer, facilitate progress, and keep up interest, if men's minds are prepared for each day's training by an explanatory talk or lecture by the captain or other officer, supplemented in the beginning by further preliminary explanation on the ground.

In field training a too rapid change of program is not only not an advantage, but a positive disadvantage. For example, if the principles of the use of the ground in attack are being taught, use can be made of an entire afternoon or forenoon without interest flagging provided the subject has been well considered in advance and the ground studied beforehand.

By then changing the direction of attack, or the ground, the principles can be clinched in the men's mind by pointing out the difference made by the ground. Similar principles will govern in the instruction of defense and security.

In the use of the ground care must be taken not to call on the man to imagine conditions of terrain that do not exist on the actual area, also the problem must not be one impossible to execute on the ground being used.

Another objection to short training periods with frequent changes of subject is that before one principle is fully grasped another of a different kind is brought forward, confusion and mental overloading result, interest is killed and progress checked. Instead of accelerating progress, we retard it, and worst of all we

let slip an opportunity to show the effect of a change of ground.

These remarks apply equally to individual and collective training. It is not always an easy matter to decide what work properly belongs to individual training and what to collective.

Perhaps a workable rule may be found by applying the principle of teaching at first only the elementary and the things which apply universally, reserving for company instruction those that should be practiced frequently and on different types of ground.

Endeavor must be made on all occasions to cultivate the initiative.

A man must not be discouraged by condemning his work, method or answer offhand. Explain to him and show him wherein he is wrong. Any tendency to fault-finding is absolutely out of place in training. It is destructive of progress and the fault is more than likely the instructor's in such cases, because of poor past instruction. It should not be necessary to say that a man's mistake should never be made the subject of a laugh.

The matter of preparing the work beforehand is so important that it is again mentioned. A method that seems excellent is that of General Haking of the British Service. At the close of each day's work he recommends a visit to the ground and to map out there exactly, on the chosen area, the various exercises that it is intended to work out next training day. This insures the problem being adapted to the ground which is absolutely a necessary requirement. A lecture or talk on the problem is given the company by the captain before it begins work next day. At this is brought into prominence the principles that it is intended to illustrate.

The above method of previous preparation combined with the demonstration system of teaching will, it is believed, be found well adapted to all kinds of field training. After the demonstration, the problem or exercise should be practiced, but on different kinds of ground, as repeating over the same ground leads to fixed forms and a tendency to copy. Only after the subject in hand is well understood should a new principle or phase of work be taken up.

It is believed that this method, in addition to sustaining interest, will be most helpful towards initiative and will insure greatest progress and therefore be eminently suitable for the purpose of the problem, where time is so important.

Parts II and III, Infantry Drill Regulations, Combat, Marches and Camps, furnish an excellent guide and program for Field Training.

To insure that all duties and operations are taught in a progressive manner, each lesson should take up a situation in a logical manner, that is as it would develop in actual war. For example, in attack, the first demonstration should be the subject of the advance under the enemy's artillery fire, the other phases of the attack following progressively until finally the assault with the bayonet is made.

Similarly in defense the first problem would be a study of the object of defensive positions, the selection of the fire positions, how to strengthen the position by clearing, etc. In like manner the demonstration system can be applied to security and information, the positions of the main body, the line to be held by the company under instruction, etc. As can be easily imagined, instruction of this kind requires not only knowledge, but continuous hard work on the part of the captain and his assistants. In connection with combat, special attention should be given to leadership, combat reconnaissance, musketry, including fire discipline, direction and control, combat by night, use of the ground, etc.

Marches and camps and the means of their security will be practiced in similar manner.

Night operations require both individual and collective work, and must be assiduously practiced. The work beginning with training the eye and ear, how to avoid losing one's way, to advance without noises, etc.

It is only by knowing how that one acquires confidence in these duties, especially in work at night.

Battalion Instruction.

The actual training of troops, including physical development and discipline, must be accomplished in the company.

The battalion is purely a tactical unit and the major's duties those of a tactical commander. However, it is also his duty to supervise the instruction in the companies of his battalion to insure thoroughness and uniformity.

As tactical efficiency is the great end of battalion instruction, only such time need be given at first to the mechanism of drill

and ceremonies as is necessary to insure proper control. Any desired precision and smartness should be deferred to a later opportunity or be gradually acquired by the companies developing those qualities.

The battalion field training which consists of tactical exercises will be taken up as soon as practicable.

The Regiment.

The colonel is responsible for the instruction of the regiment as a whole. He supervises the training of the units of the regiment.

There is little formal drill. The regiment's function is chiefly tactical.

The special units, machine gun company, regimental detachment and band are instructed in discipline, in their special drill and training along the lines above outlined for company training, the difference in the character of the work being noted in the program.

Program.

In preparing a program for the expeditious instruction of new regiments, the principles and conclusions above set forth will be applied.

It is assumed that the regimental commander will have complete control of his regiment, which will have its officers present; that it will be completely equipped and mobilized at one of the army posts or at a prepared camp or cantonment, the season and terrain being favorable for training, and that therefore instruction can begin at once. Instruction will not be limited to three or four hours per day, but should cover a full day's work for the men and as much more for the officers, noncommissioned officers and special men as necessary.

At this stage the men as well as the officers are in a very receptive state and they will work hard and with cheerfulness provided their interest is aroused by a good instructor and they can be made to realize that at each instruction they are accomplishing something in the way of learning the art of being a soldier. The government requires eight hours a day of its other employes and why not from the soldier of the line? His work is as valuable as that of the soldiers at armories, depots, and the like.

It is therefore believed that it is not simply work that is objected to, but the kind of work. Close order drills and other disciplinary exercises requiring no mental effort on the part of the instructor, soon become a deadly monotony to all concerned and even an hour of them each day becomes tedious. Drill work must therefore be kept down, but in training, where the intelligence is exercised, and useful knowledge imparted, and the fact made apparent to all concerned, the hours may be lengthened without incurring any risk of killing interest.

The ever varying terrain offers an unlimited field for work in solving the great variety of problems that a good instructor may wish to try out with his company. There is great opportunity for originality and initiative, but even the most experienced instructor will have to work hard and will find his time fully taken up.

In preparing the program which follows the principle has been kept constantly in view that the essentials must come first; other matters, however important, being postponed.

A program covering ten weeks or sixty drill days is submitted. It takes full advantage of the willingness of new soldiers to work and their desire to learn, by providing well filled days.

In cutting the work to ten weeks it is not to be inferred that a regiment thus trained is in condition to meet the full demands that are made on Infantry in modern war. Only the foundation has been laid. However, it is believed that the regiment will be able to take the field, prove a valuable organization and will in proper hands continue to develop in efficiency and usefulness.

Finally it is to be noted that the schedule takes into account the possibility of the time of training being cut to a period of less than ten weeks. In seven weeks all the essentials are covered to some degree.

FIRST WEEK.

COMPANY TRAINING.

Instruction.	*Hours.*	*Remarks.*
Physical Training.	6	Calisthenics.
Rifle, Nomenclature and Care—Equipment and Clothing, Care of—Making the Pack.	6	Instruction and Demonstration.
Drill Regulations, Infantry, Schools of the Soldier and Squad.	6	Instruction, Demonstration and Drill.
Messenger and Orderly Duty.	1	Instruction.
Military Courtesy.	1	Lecture by Battalion Commander.
Care of Health.	1	Lecture by one of the Surgeons.

Articles of War and Regulations and Orders affecting Soldiers.	1	Read and Explained.
Guard Duty.	5	Instruction and Catechism.
Ceremonies.	1	Inspection.
Lecture.	½	By Colonel on Patriotism.

SPECIAL INSTRUCTION.

First Aid and Personal Hygiene.	1	By Regimental Sanitary Personnel instructing Company Officers and Noncommissioned Officers and Selected Privates to fit them for duty as instructors.
Company Administration.	2	By Major instructing Officers, 1st Sergeant, Q. M. Sergeant, Co. Clerk, Artificer, and one or two Selected Privates to fit them for their special duties in the Company.
Pistol or Revolver (Nomenclature and Care).	½	By Major instructing those so armed.
Trumpet Practice and Visual Signalling.	12	Company musicians, and Selected Privates.
Commands, Orders and Signals.	2½	By Major at first, then by Captain instructing Noncommissioned Officers and Selected Privates.
Battalion School.	2½	By Major instructing and drilling Company and Battalion Staff Officers. (I. D. R., S.A.F.M., M.G.D., F.S.R., A. R. and Bayonet Combat.)
Cooking.	In Co. Kitchen except one hour, when at drill.	Men selected as cooks under instruction—(These men taken from those with experience as cooks).

SECOND WEEK.

COMPANY TRAINING.

Instruction.	*Hours.*	*Remarks.*
Physical Training.	3	Butts Manual.
Infantry Drill Regulations, (School of the Squad and Soldier and Manual of Arms).	6	Instruction and Drill.
Guard Duty and Courtesies.	3	Instruction and Examination.
Sighting and position drills preliminary to target practice.	10	Instruction, Drill and Practice.
Articles of War, Orders and Regulations affecting Soldiers, Personal Hygiene and First Aid. Soldier's Handbook.	2	Instruction and Demonstration.
Lectures.	2	(1) Oath of Enlistment. (2) Soldierly and gentlemanly conduct by Lieut. Col. and Colonel.
Ceremonies.	1	Inspection.

SPECIAL INSTRUCTION.

Personal Hygiene and First Aid.	1	(Continued from First Week).
Company Administration.	2	(Continued from First Week).
Visual Signalling and Trumpet Practice.	12	(Continued from First Week).
Orders, Commands and Signals.	2½	(Continued from First Week).
Battalion School.	2½	(Continued from First Week).
Cooking.		(Continued from First Week).

THIRD WEEK.

COMPANY TRAINING.

Instruction.	*Hours.*	*Remarks.*
Physical Training.	3	Butts Manual (Continued).
Bayonnet Exercise and Fencing.	3	Instruction, especially Thrusting.
Infantry Drill Regulations (School of Company—Close and Extended Order).	6	Instruction and Drill.
Drills preliminary to Target Practice including Gallery Practice and Estimating Distance.	10	Practice.
Use of Ground in Attack.	6	Theory, Demonstration and Practice (Individual).
Instruction continued in Subjects in Soldier's Handbook.	1	Instruction and Examinations.
Lectures.	1	Lectures by Major on Discipline and Courtesy.
Ceremonies.	2	Inspections.

SPECIAL INSTRUCTION.

Visual, Signal and Trumpet Practice.	12	(Continued from First Week).
Orders, Commands and Signals.	2½	(Continued from First Week).
Battalion School.	2½	(Continued from First Week).
Theory and Principles of Combat, Attack, Defense, Leadership, Teamwork, Fire Superiority and Deployment.	5	By Major instructing Company and Battalion Officers, Noncommissioned Officers and Selected Privates.
Cooking.		(Continued from First Week).

FOURTH WEEK.

COMPANY TRAINING WITH BATTALION AND REGIMENTAL DRILL.

Instruction.	*Hours.*	*Remarks.*
Bayonet Drill and Combat.	3	Drill and Practice, especially Thrusts.
Infantry Drill Regulations, the Battalion (Close Order).	4	Instruction and Drill.
Infantry Drill Regulations, the Regiment (Close Order).	4	Drill.
Use of Ground in Defense and Security.	6	Theory, Demonstration and Practice (Individual).
Firing Instruction including Gallery Practice, Estimating Distance Drills and Use of Range Finder.	8	Instruction and Practice.

March of 6 miles with reduced packs and Establishment of Camp and Bivouac, Camp cooking and construction of sinks, etc.—Instruction in security (day and night)—Company acting as advance guard of a larger force on March out and return; as one of the supports of the outpost at camp. Instruction in patrolling.	One day and night.	Instruction and practice.
Lectures.	1	By Surgeon on Sanitation in Camp and on the march.
Ceremonies.	1	Review. By regiment.

SPECIAL INSTRUCTION.

Trumpet Practice and Visual Signalling.	8	(Continued).
Theoretical and Practical Instruction in Combat, Marches and Camps.	3	By Major instructing Company Officers and Battalion Staff.
Cooking.		(Continued).
Reconnaissance work, use of Ground, Sketching, Map-reading and field intrenchments, including overhead cover, obstacles and clearing.	3	By Major instructing Company Officers and Battalion Staff and Noncommissioned Officers.

FIFTH WEEK.

COMPANY TRAINING.

Instruction.	*Hours.*	*Remarks.*
Bayonet Combat.	2½	Practice—especially in offensive work.
Company in Attack—by Day—by Night. Company drill (Close Order).	12	Theory, Demonstration and Practice through different stages beginning with advance under artillery fire and ending with assault. Each day to end with ¼ hour Close Order Drill.
March of 6 to 8 miles with reduced packs—Wagon Packing — Castramentation— Security — night operations — Camp Cooking including practice in individual cooking.	One day and night.	Practice in marching—day and night — Security, day and night, including advance guard, outposts, patrolling and scouting.
Target Practice — Estimating Distance and Use of Range Finder.	15	Four ½ days — (on Target Range—Regular Course).
Lectures.	1	By Major on the Initiative—Teamwork and Leadership.
Ceremonies.	1	Inspection (Company equipped for field).

SPECIAL INSTRUCTIONS.

Visual Signalling and Messages.	6	Practice. Instruction in use of message blanks.
Theoretical and Practical Instruction in Elementary Field Fortification including making obstacles, proofs.	2	By Major instructing Company Officers and Noncommissioned Officers.
Combat, Marches and Camp.	1½	Lectures by Major to Company and Battalion Officers, Noncommissioned Officers and Selected Privates.
Orders, Messages, Reports and use of Message Book.	1½	By Major instructing Battalion Officers.
Cooking.		(Instruction continued until cooks become competent).

SIXTH WEEK.

COMPANY TRAINING.

Instruction.	*Hours.*	*Remarks.*
Bayonet Combat.	2½	(Continued).
Company in Defense, by day, by night,—Company Drill, Close Order.	12	Theory, Demonstration and Practice, including: the selection of the Fire position, intrenching, obstacles, etc. The assistance afforded by artillery—The trajectory of the bullet with reference to the ground—Instruction to end with 15 minutes Close Order Drill each day.
March 9 to 10 miles with reduced packs—Wagon Packing—Castramentation, Security, night outpost, patrolling, and Scouting—Practice in Communication.	One day and night.	Practice (Especial attention to night operations, the entire night being used).
Target Practice including Estimating Distance, and Use of Range Finder.	16	Four ½ days (on Target Range—Regular Course).
Lecture.	1	By Major on the Spirit of the Offensive.
Ceremonies.	1	Battalion Parade.

SPECIAL INSTRUCTION.

Visual Signalling and Messages.	6	(Continued).
Orders, Messages, Reports, use of message book.	1	By Captain—Instruction and Practice—Class of Company Officers, Non-commissioned Officers, and Selected Privates.
Field Fortification, including passage of obstacles, repairs to bridges, demolitions, etc.	3	By Major instructing Battalion Officers.

SEVENTH WEEK.

COMPANY AND BATTALION TRAINING.

Instruction.	*Hours.*	*Remarks.*
Bayonet Combat.	1½	One-half hour, 3 days a week, before proceding to or after returning from the Target Range.

By Battalion—Two marches of about 10 to 12 miles with reduced packs. Exercises in Security on the march and in Camp—by night and day and in field fortification.	2 days and nights.	Two march problems in which the Battalion is one of the Security Detachments of a larger force—Also exercises in night and day out-post work, and in occupying and strengthening a defensive position.
Battalion Drill.	1	For 30 minutes before dismissal upon return from 2 days march exercises.
Small arms Practice.	3 days.	Target Practice and Field Firing Exercises.
Lecture.	1	By Battalion Commander on Combat.
Swimming.	1	Instruction and Practice.
Ceremonies.	2	Review and Inspection Battalion equipped for the Field.

SPECIAL INSTRUCTION.

Visual Signalling.	6	(Continued).
Company Administration.	1	Inspection of by Battalion Commander.
Company School.	1	For Noncommissioned Officers and Selected Private by Company Officers.

EIGHTH WEEK.

COMPANY AND BATTALION TRAINING.

Instruction.	*Hours.*	*Remarks.*
Bayonet Combat.	1½	On 3 days, ½ hour each before proceeding to or after return from Target Range.
By Battalion—2 Marches about 12 miles—Full Equipment—Special attention to the feet.	2 days.	Problems—1st day, Battalion as advance guard and rear guard of a larger force. Arrival in Camp after dark. Support of an outpost line. Supper, Action in case of attack. 2d day,—Flank Guard and advance guard with Rencontre. Also attack of a position and passage of obstacles, crossing of streams, improvising bridges, making rafts, etc.
Company Drill.	1½	For 30 minutes before dismissal from, or before forming for, Target Practice.
Small Arms.	3 days.	Target Practice and Field Firing.
Lecture.	1	Battalion Commander — Guerilla Warfare.
Ceremonies.	1	Company Field Inspection.

SPECIAL INSTRUCTION.

Visual Signalling.	6	(Continued).
Company Administration.	1	(Continued).
Company School.	1	(Continued).

Reconnaisance, Sketching.	6	By Company Officers instructing Noncommissioned Officers and Privates showing aptitude.

NINTH WEEK.

REGIMENTAL TRAINING.

Instruction.	*Hours.*	*Remarks.*
Regimental Marches.	7 days march under service conditions 10 to 15 miles, full loads.	Preparation problem—Taking the field equipped for war. March problem—Advance—Regiment alone. March problem — Advance — Regiment Security Detachment for a larger command. March problem—Retreat. Regiment alone. March problem—Retreat. Regiment Security Detachment for a larger command. March problem—Escort of a convoy. Problems in reconnaissance in combat, attack, defense, rencontre, outposts and convoys. Practical application of Field Engineering to attack and defense problems. Use of Signalling on march and in combat. Night operations—Making and breaking Camp. Packing wagons. Sketching. Tactical Rides by Regimental Commander with the Battalion. Commanders and Staff.

TENTH WEEK.

Instruction.	*Hours.*	*Remarks.*
Bayonet Combat.	3	(Continued).
Company Drill.	3	Close and Extended Order.
Small Arms.	3 days.	Target Practice, Field Firing and Estimating Distance.
Battalion Marches.	1 day.	Passage of Defiles—Crossing a stream.
Tactical Walks.	1 day.	By Major with Battalion Officers. By Captain with Noncommissioned Officers and Selected Privates.
Lecture.	1	By Major on Rifle Fire and Influence of the ground.
Ceremonies.	1	Inspection by Company.

NOTE: During the period of field training, tactical walks will be held with platoon commanders, and with all noncommissioned officers of the company whenever an opportunity offers.

Regimental Detachment and Band.

Mounted orderlies will have a course in equitation and messenger work.

The machine-gun platoon also will follow generally the course laid down for the companies and the battalion, omitting the bayonet exercises, manual of arms, and taking up the care of animals and packing in lieu thereof.

The band in addition to its musical work will be given under the direction of the surgeon the instruction necessary to fit its members for duty on field of battle as auxiliary sanitary troops.

Subsequent Weeks.

If there be time for additional training continue the instructions on the lines of the last six weeks, perfecting the knowledge of the rifle and bayonet while continuing the development of the Officers and Men in combat and security, especially the attack.

Specialization in scouting should be cultivated on the part of men in the companies possessing a knack of that sort of work.

Above all initiative must be developed, the spirit of the offensive cultivated and night operations not overlooked.

G. O. 17, 1913, and the Infantry Drill Regulations, Parts II and III, are a sufficient guide for further training. The regimental commander will now know at what points the training needs tightening up and it can best be left to his discretion to provide any further schedule needed.

Remarks.

In the execution of any program it is necessary to success, especially when time is an important consideration, as is our case, that administration detail be not allowed to obstruct the work of instruction.

While it is recognized that guard, police, sick call, morning reports, etc., are important matters and must not be neglected or slighted, nevertheless these duties should be arranged so to interfere least with the training. The change of guards can certainly be scheduled for an hour when instruction is not in progress.

The interference of useless roll-calls should also be avoided. The regulations require but few and the number necessary in any case is not large.

The program provides that the medical and sanitary personnel of the regiment be utilized to give officers, noncommissioned officers and selected privates the instruction in personal hygiene and first aid necessary to fit them as instructors of the men of the company.

It is also intended that instruction in guard duty be kept distinct from guard duty as a matter of necessary police protection.

The number of men on interior guard duty must be kept down to the least consistent with the necessities of the case.

The time assigned for ceremonies should be chiefly devoted to ascertaining the state of equipment of the organizations, companies, battalions and regiment, and their preparedness for war.

In the training of newly raised volunteer regiments of the character under consideration, wherein only the field officers are apt to be educated and experienced soldiers, it will be necessary both to progress and efficiency, that Battalion Commanders enter more into the details of the instruction of their companies than is contemplated by orders and regulations in the ordinary case of the annual training of regular troops. This fact is taken into account in the program, and battalion schools are provided for officers in which they will be instructed and drilled too if necessary by the major. In fact it is expected that the major's duties at first will be more those of the teacher than of the supervisor and inspector, also it will fall to him to instruct in matters of administration as well as those relating to drill and training.

Varied Ground.

①

An Auxiliary Aiming Point or Line.

The principles governing the use of an auxiliary aiming point, or aiming line, are found in the Infantry Drill Regulations, paragraphs 247 and 251, and in the Small Arms Firing Manual, paragraphs 218 and 220; the whole chapter on the adjustment of fire (S. A. F. M. page 133) is closely related in principle. This paper will not discuss principles, but will attempt to give one rule of thumb for quickly determining the correction in elevation and deflection when the aiming point is used.

In using an auxiliary aiming point or line, the platoon commander (or company commander) is called upon promptly to determine the correction in elevation and deflection to be applied in order that the beaten zone may fall on the target when the rifles are directed on the aiming point or aiming line.

The following method, developed in the second battalion, 22d Infantry, has given speedy and satisfactory results:

Tie a string to the pencil; make a knot in the string at a distance from the pencil equal to the sight radius (distance between the front and rear sights); place the knot against the cheek and extend the pencil hand towards the target; using the top of the pencil and thumb nail, get the vertical intercept between the target and aiming point; apply this intercept to the rear sight leaf at the true range to the target, scale downward if the aiming point be above the target, upward if the aiming point be below the target; read the correct range. In a similar manner get the horizontal intercept between the target and aiming point and scale for points on the movable base; the correction will be right or left according as the target is right or left of the aiming point.

The true range to the target must be determined in the usual manner.

In getting the vertical intercept, the observer's eye must be in the same horizontal plane as the eyes of the firers; otherwise considerable error might be made.

The aiming point must, of course, be within the limits of rear sight adjustment.

An accuracy greater than the least subdivisions of the scales on the rear sight is of no particular value.

When a single good aiming point is used, the beaten zone may be increased by the use of combined sights, both in elevation and deflection.

A yard of strong linen thread makes the best string. When not in use, wind it on the pencil. A split in the top of the pencil secures the loose end.

The method may be readily understood by the following explanation:

Assume the following situation; a rifle with sight set, deflection 0, elevation **1000**, aimed at a target, range **1000**, no wind, the rifle clamped immovable. A good aiming point is seen above and to the left of the target. With rifle still clamped, take windage to the right and lower the slide until the sights are directed on the aiming point; reading now, elevation **800**, deflection 2 points right.

Had the observer taken the vertical and horizontal intercepts on the pencil as described above, the intercepts, should have scaled respectively, 200 yards down from **1000**, *i.e.*, **800**, and 2 points deflection (to the right S. A. F. M. **64**, **70**).

EXCERCISES INVOLVING ADJUSTMENT OF FIRE.

Exercise No. **1.**

Aiming point is below and to the right of the target.

Vertical intercept, one fourth inch.

Horizontal intercept, one-eighth inch.

Range, **1200** yards.

What is your sight setting?

Exercise No. 2.

Aiming point is above the target.

Target is a line of skirmishers, range **1000** yards.

Vertical Intercept one-sixteenth inch; horizontal intercepts to extremities of target, two points right and two points left.

Your platoon contains four squads; set sights for elevation and deflection so that good distribution is secured at the outburst of fire.

Exercise No. **3.**

The aiming point, the eyes of the firers, and target, are in the same horizontal plane.

Target; a line of skirmishers **50** yards long, range **1200**.

Horizontal intercepts, equal.

Target invisible except through glasses; set your sights to best advantage.

Exercise No. 4.

Aiming point below and to right of target; target, invisible except through glasses, consists of a column of squads headed towards your company; range, 1500.

Vertical intercept, one-half-inch; horizontal intercept scales four points; error in estimation of range judged to be 15%.

Company at war strength; give captain and platoon commander's fire directions.

Exercise No. 5.

Target, a troop of cavalry at a gallop, moving west; visible through glasses. A good aiming point below and to left of a selected point on their route; range to this point, 1100, vertical intercept scales 80 yards; horizontal intercept scales three points; your platoon is due south of aiming point; error in estimation of range, 0. Set your sights, and open fire so as to hit the head of the column. As platoon commander, what action would you take in order to do the most damage, on the assumption that what was left of the column continued at a gallop westward?

ARTHUR JOHNSON,
Major 22d Infantry.

Men and Matériel.

"The preparation of a nation for war," say Majors Bond and MacDonough in "The Techinque of Modern Tactics," is of two kinds: one of material things, the construction of forts, arsenals, fabrication of weapons, munitions, etc.; the other, the training of its people. And the second is more important than the first, though in the United States the estimate of their relative importance is reversed. The people of the United States are willing to vote immense sums for preparations that concern matériel, but they grudge time or thought devoted to the war training of the fighting unit—the man.

From a military viewpoint, popular action has undoubtedly reversed the order of importance of the two great factors of war, men and matériel. And yet it is probable that in the popular conception, it is equalization rather than a reversal that has

taken place. For men already exist; we must create the equivalent matériel in order to restore the balance. This is the logical conclusion of a state of mind that finds it possible to comprehend only that which can be weighed, metered or gauged. Man himself is placed on the level of matériel and figures only as a quantitative factor.

Men and matériel are the two simple elements whose combinations embrace the whole field of the Art of War. The truth of all our conceptions of war depends upon a correct appreciation of the relations of these two factors.

The different phases of these relations give rise to different aspects of the Art of War.

The properties of matériel and of man conceived as a purely material being constitute techinque—the material aspect of war.

The combinations of matériel with time and space relations give rise to the science of strategy and tactics—the intellectual aspect of war.

The science of war would end here if both men and matériel were under the absolute and invariable control of one intelligence, and victory would always be to him who conceives the most effective strategical and tactical combinations, whose personnel is most numerous and equipped with the best matériel and technical training.

But the existence of an independent will in each human being—a will which is primarily directed by the instinct of self-preservation—demands the exercise of a higher knowledge and power than either technics or tactics—the quality of leadership on the part of the chief and capacity for being led on the part of the man. This is the moral aspect of war.

And these three elements of the Art of War, technique, tactics, and leadership, vary in importance somewhat in accordance with a constant law; their sum may be conceived to be a constant quality. Thus where an especial necessity for one element exists, there is a corresponding diminution in one or both of the other two. Static forces, because of an exact fore-knowledge of conditions under which they will be called upon to act, can form a preconceived plan of action and can avail themselves of technical appliances and methods which would be impracticable under more changeable conditions. The tactical principles to be applied are correspondingly simple, and the necessity for a high order of morale does not exist. So, too, the more immobile parts of a field

army, which do not enter into close contact with the enemy, are permitted to avail themselves of technical apparatus and methods, to a less degree it is true than completely statistic forces, but to a degree not practicable to troops called upon to meet more unstable conditions. The requirements in their case of tactical skill and high morale are correspondingly less pressing. With troops whose duties be primarily in maneuver and secondarily in combat morale is more requisite, and tactical qualities are paramount, while the factor of technique decreases in importance. But for forces which must traverse a fire-swept battlefield, while technique is necessarily of a relatively simple order, an understanding of the application of tactical principles to an ever-changing situation is indispensable, and the necessity for a high order of leadership is supreme. Simple though technique may be in the latter case, it is sufficiently complicated by the varying conditions under which it must be applied.

This law is imposed by the limitation of human nature to cope with more than a certain number of factors at any given time. All military technique is necessarily simple, and the necessity for simplicity increases with the importance of the function. The greatest simplicity may be so complicated by the conditions under which it is applied that the principles must be much more thoroughly mastered than those of more complex systems which are applied under conditions admitting of calm and deliberate action.

A lack of understanding of the relation of training to morale is largely responsible for the popular scepticism as to the necessity for the preparation of man for war. Courage is a quality currently attributed to the individual and believed to be inherent and more or less fixed in degree. And yet it is precisely in respect to moral qualities that the trained soldier is most sharply distinguished from the raw levy.

The truth is that while individual courage is the basis of the moral value of the soldier, that quality is fairly uniform in human nature, and the cause for the difference between the courage of trained and untrained troops is to be sought in acquired and collective rather than innate and individual characteristics. The requisite quality closely resembles the desired end; the unified action necessary for success requires that each man shall have identified his aspirations with the welfare of his organization—teamwork; it requires that he be trained to look to his commander

as the means of insuring that unity—discipline. The essential element in the creation of these two bonds—the habit of discipline, which unites the man to his commander, and the sentiment of solidarity which binds him to his comrades—is time; and the time required to form a dependable soldier varies directly with the necessity for these qualities. The measure of the degree of training necessary is the severity of the test to which that training will be put.

Matériel is of course a necessary factor in war. It is, however, of value only as a means of giving expression to the moral value of the man. As Colonel Montaigne has pointed out, a blunderbuss in the hands of an inferior soldier is about as effective as a high-power modern rifle; but the latter increases the power of destruction of the trained fighting man a hundred-fold. And the conditions of the battlefield, far from reducing all combatants to a dead level of equality, infinitely accentuate their individual differences.

There is perhaps a more serious aspect to the lack of a trained force adequate for war purposes than merely that deficiency itself. Military qualities are developed only through action; leadership can be learned only by leading. And what scope is offered for the development of that quality to the three officers on the Rio Grande or in Vera Cruz who daily face a company of 35 or 40 men?

The lack of trained men and of men for training is infinitely more serious than any material shortage. The greatest need of the Mobile Army and the greatest military necessity of the nation is "Adequate strength to permit of efficient training." Give us companies of 100 men.

A. L. G.

A Combined Recruiting Service.

The following plan is suggested for the recruiting of the Army, Navy, and Marine Corps:

Abolish the present methods and inaugurate and maintain a system under the direction and supervision of the joint boards of the Army and Navy constituted by G. O. 107, A. G. O., July 20, 1903.

Stations for recruiting should be maintained throughout the country as they now are and details to and from the recruiting

service made as at present. The number of officers to be detailed on recruiting duty from the Army, Navy and Marine Corps should be in proportion to the enlisted strength of each. For example, if 200 officers are needed and the strength of the Army is 90,000, of the Navy 50,000, and of the Marine Corps, 10,000, then there should be detailed 120 Army officers, 67 Naval officers, and 13 Marine officers. The number of enlisted men to be detailed on recruiting duty will be determined by proportion in a manner similar to that proposed for officers. The number in each grade and rank required will be determined by the joint board and divided among the services proportionately. The expenses of the recruiting stations should be assessed by the joint board dividing the total expense in proportion to the strength of the separate services, the War and Navy Departments furnishing the funds required.

Recruits should be accepted for the service they select as is now done in the Army recruiting service and forwarded as at present to the places designated respectively by the War and Navy Departments. An appropriation should be made to be used in furnishing a bonus at the rate of $5.00 for each accepted recruit who has had no previous service. The bonus, however, should be given for recruiting any man who has had previous service and has failed to reenlist within three months, and should be given in peace or war. The money given as a bonus is to be divided by the recruiting officer among his enlisted detachment, as for example, sergeants to receive $2.50, corporals $1.50, and privates $1.00.

The following advantages of the proposed system are noted:

1. In several towns and cities it is often noticeable that at present there is a crowding in the number of recruiting stations. The sphere of activity, say, of the Army is four stations and of the Navy four and of the Marine Corps two, whereas the town cannot furnish recruits for more than four stations all told and keep the per capita cost of each recruit obtained below a cost that is not extravagant. So many services represented in one such place are cutting down the possibilities of one service doing good business, yet as all the services have to exist so the stations continue open.

2. The class of recruits needed for the services are almost identical. Therefore the new system will provide all the desirable recruits needed.

3. Needless duplicating of stations, material and detachments will not exist under the proposed system. The present cost of recruiting for the services is out of all proportion to the cost for each man obtained.

4. A candidate who presents himself for enlistment under the present arrangement may be rejected for some cause and likely goes away and is not enlisted. Under the proposed combined and cooperative system it may be that the cause for which he was rejected for a particular service would not bar him in another and he would be therefore chosen for the service for which he is eligible and not lost to the government.

5. Under the present methods it happens that whenever, for example, the Navy is recruited up to its full strength, recruiting must stop for that service. This requires that the stations remain inactive but still open, at a great expense without doing any useful work and at great loss to the government. Under the combined and cooperative system proposed it would seldom if ever occur that recruiting for all three services would cease all at the same time. In other words, the stations would be doing business at all times.

6. An improved method of actively advertising the services could be taken up under the new system, whereas at present on account of expense and limited scope of subject it is impracticable to do this efficiently. Methods suggested are by moving pictures, traveling automobiles, specially arranged railroad cars, recruiting gunboats or cruisers traveling along the coast and on the rivers and lakes.

7. With the proposed combined and cooperative recruiting system a better method of housing the recruiting parties could be devised as more funds would be available than at present per capita of enlistments. It is hoped that in future the second-rate places for stations will be abandoned, such as over saloons and sandwiched in between unattractive work-shops. Leases over extended periods should be made for quarters approaching the qualities found in barracks at army posts, and the stations made as attractive.

8. The great numbers of officers and enlisted men now engaged in recruiting are out of all proportion to the number that the services can afford to have on such duty. With the system proposed for a total enlisted force of 90,000 for the Army, 50,000 for the Navy and 10,000 for the Marine Corps no more recruiting

stations would be required than the number now in use by the army. Hence, the figures named would be cut almost in half.

WILLIAM TULHALL,
Captain Coast Artillery Corps.

Bayonet Combat Instruction.

The recent impetus given instruction in bayonet combat and exercises furnishes the motif to set down a few notes thereon.

Let us assume that real efficiency in the use of the bayonet cannot be attained unless each soldier undergoing instruction is confronted by an opponent at all times after the rudiments of foot work and manipulation of the rifle in the various positions of attack and defense have been learned. Unless you do confront him with an opponent frequently he will absorb an abstract and unpractical idea of what he should do rather than a concrete and practical one. Work with the fencing equipment is necessarily limited because of the limited number of sets furnished. The practice of lining men up all facing in the same direction and having them punch holes in the air and cut slices from it in an endeavor to do injury to an imaginary opponent has little to recommend it except a training of muscles which can be accomplished just as well by the method to be set forth hereafter. Why use valuable time in that sort of work when the same benefits may be obtained in conjunction with definite training? The following system supplemented by work with the fencing equipment gives a simple means of imbuing those undergoing instruction with a tangible idea of what they would be obliged to confront without the protection of the plastron, mask and gloves. It is an adaptation of the broadsword instruction given at the U. S. Military Academy and has the advantage of combining instruction in attack and defense in a practical way. It has been tried with success during the preceding three years and a half.

A good attack is easily developed, but it is the man who can defend himself well who will have the greatest chance of victory in a personal combat.

1. Distribute the men so that each will be confronted by an opponent *i.e.*, if instructing a company cause them to take distance to the front, have the odd numbers face about and move to positions directly opposite the even numbers.

2. Cause all to take the position of GUARD, bayonets unfixed and see to it that opponents approach each other as closely as possible without danger of striking rifles together.

3. The commands given will be obeyed by the odd numbers, the even numbers guarding whatever attack may be made upon them, being careful to accompany their defense by the proper footwork. This will be succeeded by causing the even numbers to execute the commands and the odd numbers to conform in foot work and make a proper defense. Except when executing commands by the numbers the position of GUARD will always be resumed on completing the attack ordered.

4. Instead of giving such indefinite commands as 1. Right 2. CUT, etc., give commands that will insure attack upon a definite part of the body and at the same time erase from the mind of the attacker all indecision as to the exact point he should attack by giving such commands as: 1. Head 2. CUT—1. Right (Left) Head 2. CUT—1. Right (Left) Leg 2. CUT—1. Right (Left) Flank 2. CUT, etc. Such commands cause the attacker to form in his mind a definite idea before delivering his attack, in other words the psychological effect of a command must be considered.

Make the foot work interesting and use it freely in connection with the rifle work, giving such commands as: 1. Front pass 2. Right step 3. Left head 4. CUT.—1. Rear pass 2. Front pass 3. Left step 4. Right leg 5. CUT—1. Front pass 2. Right step 3. Head 4. CUT, etc. Combinations of this sort will develop great versatility in both the attacker and defender and cause the pupil to attain a high state of coordination of foot work and rifle work. The last command in each case is the command of execution.

It has been found that the average pupil will not execute a full feint and hence his opponent will make little attempt to guard it. To overcome this difficulty it is best to give a command such as 1. Right head cut 2. LUNGE instead of 1. Feint to cut the right head 2. LUNGE and 1. Right and Left head 2. CUT, instead of 1. Feint to cut the right head 2. Left head 3. CUT. The intonation of the voice will convey to the pupil what moment he is to begin the attack, when these combinations are used.

Before closing an instruction session the class should be brought to the position of GUARD and the command AT WILL given. This will enable the pupils to work out individually the different points they have learned during the session.

Much depends on the amount of nervous energy put into the

work by the instructor, in fact it cannot be successful unless a great deal of that valuable force is used.

At first the exercises should be given "by the numbers" so that the instructor may see whether or not the correct positions are taken both for attacking and defending. After he has assured himself that individuals are proficient in assuming positions and that each knows the proper guard for any attack that may be delivered, also the proper foot work to go with it, the commands may be executed without the numbers and the rate of execution gradually increased. The instructor should always assure himself that individuals assume a good "scrappy" position, weight resting equally on the balls of both feet, knees bent, etc. Tension of the muscles must be avoided as they must be relaxed and then flexed before action is had from them. If they are kept in a state of semi-relaxation it is only necessary to go through the one operation of flexing them, hence quicker action takes place.

Those of the company who attain proficiency rapidly should be placed in a class by themselves so that they may be advanced rapidly, and qualified as assistant instructors. Those most backward are also placed in a class by themselves so that they may be given more time and attention by the best instructors, always keeping in mind in bayonet instruction as well as in all other kinds that the development of a good average company is far more desirable than the production of a few experts.

To sum up:

1. Provide actual opponents in all instruction except the most rudimentary.

2. Give commands that name a definite point of attack.

ROGER H. WILLIAMS,
2d Lieutenant, 7th Infantry.

An Original Method of Investigation.

Colonel Mangiarotti, who has just returned from Libya, has published in "Rivista Militare Italiana" an interesting psychological study on the data collected by him at the African theatre of war. The ways and methods of his investigations are quite original. In order to gain an objective, unprejudiced opinion on the psychology of the soldier during the battle, Colonel Mangiarotti put up his questions to about 2000 soldiers. First of all he wanted to find out at what moment did the soldiers feel their worst during a

battle, a question to which 1700 soldiers replied that the most unpleasant moment was that of the beginning of the battle, when the first bullets began to whiz and the first wounded and killed began to break down. Most of those questioned added, however, that they had imagined the battle to be much more terrible, and that during the further course of the battle they were indifferent and benumbed, as it were. Some of them declared that for them the most unpleasant time was when they were compelled to lie quietly in waiting and be fired upon, without daring to proceed forward; and in this case the order to proceed for the attack was always welcome as a relief from the unendurable situation. According to Mangiarotti's experiences, the most depressing situation for the troops is that of forced idleness while, during the heat of the fight the physical strain leaves no time for unpleasant sensations and feelings.

Mangiarotti also questioned the soldiers as to their thoughts during the battle; did they think at that time of their king or of the punishment that would follow their freedom (desertion), and whether they had any patriotic or religious thoughts at that time, but all of them replied that they hardly thought of anything in particular then but just moved forward, following their lieutenant who was with them. Very few of them had any recollections of their captains as in most cases their immediate superior was the (1st or 2d) lieutenant.

Mangiarotti further concludes that the behavior of the officers has always a decisive influence on the troops. Should the soldier notice that his officer hesitates or shows any signs of weakness when he has pushed on a dangerous attack he immediately loses all its courage, and a carelessly spoken word or a sign of giving way (instinctive as it may be) or a doubtful nod of the head on the part of the officer may result in the total demoralization of his troops. On the other hand, personal courage encourages the soldier, and it is, therefore, urgent and necessary that each officer or non-commissioned officer "hold himself in discipline of iron."

Finally, remarks Colonel Mangiarotti, after the first depressing sensations have been overcome, the soldiers do not show any more signs of fear or anxiety; they become then so possessed with the fever of the fight that they do not think any more of anything else.

Reprints and Translations.

Employment of Fire Units and their Rôle in the Infantry Attack.*

By Captain Segretain, French General Staff.

I.

ALL attacking units have but one object: to lodge the bayonet in the throat of the enemy; but one means of doing this: by pushing the attack ever forward.

The enemy, in accomplishing his object, makes use of a powerful means of stopping the oncoming attack: his fire. However intense this fire may be, though, it can only temporarily arrest the advance of the resolute assailant up to the moment of his entry into the zone of effective rifle fire.

At this stage of the advance, however, the methods employed: painstaking care in use of the terrain combined with very short, fast rushes by groups kept well in hand will not suffice to advance the attack; the enemy's fire would shatter any attempt to advance unsupported; therefore this fire must be prevented or at least so interfered with that the advance can again be resumed.

Rifle fire and artillery fire will come to our assistance.

The object of this study is to determine how these two kinds of fire can act for and against the first line of attack, and particularly to examine the possibility of combining with the forward movement of that line, its own rifle fire and the fire of friendly artillery.

We are confined to consideration of the period of the attack which commences when the skirmishers enter the zone of effective rifle fire, and which ends with the assault; we consider only the movement of the first line exclusive of the reserves.

Our beginning will be a consideration of the nature of artillery fire and rifle fire which appears to us to be so well understood that a detailed examination is unnecessary. Therefore we shall simply enumerate the essential characteristics of each.

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* From the *Revue Militaire Général*, January, 1914. Translated for the War College Division of the General Staff by 1st Lieutenant Benjamin F. Castle, Infantry.

Artillery fire can be accurately directed at very distant targets but can only act over certain portions of the terrain and at certain moments by reason of the restricted number of batteries and the limitations of ammunition supply.

Rifle fire, on the contrary, is quite accurate in direction but not susceptible to precise adjustment on the target on account of the morale of the firers. As a result of this characteristic when the rifle is engaged we have along the whole front a zone almost uniformly dangerous "from the muzzles of the rifles to the extreme limit of their range."*

II.

We have confined our study to that part of the offensive combat which extends from the last position from whence the assailant cannot advance without firing, to the enemy's position.

What distance will separate these two lines? Nothing will be more variable; in one case with a flat and open terrain it may be 800 meters or perhaps more, in another case with close country, particularly in woods, it will be point blank range or nearly that.

This is the true domain of the infantry attack: no doubt that at certain points and at certain moments we shall be assisted by others; but on the other hand, sometimes the fight will be infantry against infantry. For this reason as well as for convenience of discussion, momentarily disregarding the other arms, we shall consider only the attack of unsupported infantry opposed to infantry alone.

We have said that the end and aim of the attack culminates when the throat of the enemy is reached: the enemy, however, for any given section of the attacking line is only that portion of the opposing line directly opposite the attacking section considered.

But in the infantry the whole fight is an individual affair; each of the combatants advances and fires, working out his own salvation; each conducts "his combat"; each has, in the enemy's line, his own particular opponent—that one who is directly in front of him; it is this individual whose throat he burns to reach, whose fire is especially dangerous and who must be aimed at and killed.

*Colonel Petain, Cours de L'Ecole de guerre, 1904-1906.

Undoubtedly all this is theoretical; the soldier well knows in fact that the enemy's fire as well as his own, is more or less dispersed over the front and that consequently there is danger coming toward him from a whole section of the enemy's line so that other bullets beside those of "his enemy" may reach him. However, there is no doubt that the most dangerous missiles are those of his particular opponent.

It is evident then, that if our man is skilful enough to kill "his enemy," if his comrades to left and right can do it also, the danger will surely disappear and nothing stop his advance.

But will he kill his enemy? That is not certain: the soldier well knows that even on the target range he does not always make hits especially if the objective, like the enemy, is completely concealed. There is no doubt, though, that if he fires carefully his bullets will come so near "his enemy" that the latter will be forced to hug the earth and will be so badly scared that for some time he will not dare to raise his head and expose himself long enough to fire with accuracy.

We still maintain that such an analysis of the combat in individual zones does not agree with the actual conditions.

The conduct of each man is, in the first place, greatly influenced by that of his comrades on each side of him: a brave assailant, however accurate his fire, could not alone make material progress toward "his enemy." Considering the moral factor the individual advance is still more impossible: only the group can rush, prepare by fire for the rush, and execute the rush completely at the command and under the leadership of its chief. However, in the group, individuality comes into play—each member fires and acts in his own way.

To the foregoing theory of combat we have one in opposition which briefly is as follows: the advance under fire is governed by the following law,—every group that advances in the open is doomed to destruction during the rush unless "its enemy" be kept inactive by the fire of another group which thus forms before it a protective "screen."

Briefly stated, this theory is: echelon of fire, echelon of movement—the echelon formed generally by the combat unit—the section.*

*One-fourth of a French company.

Plausible in its first aspect this theory in its application seems weak.

Where, we may ask, are the two echelons to be placed for mutual support?

That depends, replies the supporter of this theory. Sometimes they will be abreast, sometimes one to the rear of the other; it is a matter of terrain.

Let us examine these two cases.

Echelons in line: Is the fire echelon to be placed in advance or in rear of the echelon of movement?

Let us consider for example a front XY where we have in line the elements

X		D		B		A		C		Y
				b	b	aa	aa	c	c	

ABC. . .. . : if the echelon A is to make a rush it is bound to be in advance of B and C during the entire rush.

And how will oblique fire of these elements be possible unless they are separated by wide intervals? Must it be agreed that the skirmishers at the extremities b and c will not be permitted to fire or that they will only fire straight to the front while only the rifles of the center of each echelon will fire obliquely, those on the right to the right, those on the left to the left. . . . It appears to us impossible to ask this.

When the fire echelon is in advance of the moving echelon the difficulty indicated above disappears but, in this case as in the other, what will be the state of the morale of the skirmishers in the fire echelon? Exposed to the direct fire of their undisturbed enemy, obliged moreover to uncover themselves in order to execute oblique fire, how can we expect of them the coolness necessary to bring about an accurate fire?

We may recall the words of d'Ardant du Picq: "The rifleman fires in order to escape the shot intended for *him*," or in other words, in order to kill his opponent *first!*

Moreover, how is this system of reciprocal support to be regulated? Who is to decide whether B is to fire straight in front of A or to the left before D? Shall we adopt a uniform mechanical system of functioning in this regard or will the captain decide on the spur of the moment how his units will be employed? Will orderlies be used to run about carrying instructions to the different sections?

Another objection: to what distance would the application of such a system be practicable? Will there not come a moment when it will only be possible for each man to fire straight to his front? And should we admit several methods of combat: from 800 to 400, then from 400 to the assault?

Finally, and most important of all, we must add that the system outlined above appears to us most unfavorable for the development of the offensive spirit.

To imbue the soldier with the idea that he must depend upon the fire of his comrade in order to advance is, in our opinion, calculated to develope a spirit much less aggressive in character than that which can be developed by teaching him that he alone is responsible both for his fire and his advance. The temptation will be great in the fight to leave it to the neighboring section to form the advancing echelon, the situation of the fire echelon being, in spite of all, immeasurably less dangerous than that of the rushing section.

It is true that the theory of parallel echelons presents one extenuation, this consists in the admission that the fire echelon will only fire straight to the front, and that the sole fact of this direct fire will suffice to facilitate the advance of the flanking elements. Thus presented the system no longer appears impossible.

But its efficacy would, at first glance, appear to be slight for, as we know, infantry fire is seldom widely dispersed.

In addition, the difficulties indicated still exist: difficulty of ensuring alternation in the functions of the echelons, and above all, the disadvantage which accrues from the diminution of the aggressive spirit.

It is indisputable that the attacking line cannot advance all at once, and it naturally follows that certain elements will fire while others rush; but, in the line assuming the offensive, the assailant, that is to say *each* assailant, cannot and must not be diverted from his mission: to close on the enemy. His fire is only a means which has for its object the preparation for the advance. Anything more than this is only defensive fire or mere target practice.

Echelons in tiers. The echelon of fire, it is said, will be placed in rear of the moving echelon; this is tier fire. That this kind of fire is practicable on a particularly rough terrain presenting steep slopes we do not deny. But would this be the case in the

Lorraine country where the slopes are long and gentle? There is the whole question.

Let us consider also the enemy's fire and we shall see that his cone of fire will reach, on the terrain referred to, the elements placed in rear of the first line quite as well as the first line itself. The entire method of handling the reserves is based on this consideration.

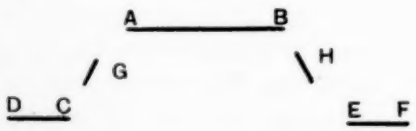
One cannot fail to see that under these conditions the fire echelon will be placed in the line of fire as well as the moving echelon, and that, as a consequence, its bullets will be especially dangerous for the echelon of movement, since the latter is on its feet and engaged in the rush when its partner must give it support.

It has been well said that during a certain attack of the Japanese, the Japanese artillery by firing at the backs of its own infantry caused the latter to decide to advance.

One objection occurs to us which at first sight appears to weaken our entire theory. Our reasoning is based on the hypothesis that the two fronts are not only parallel but composed of elements all placed on the same line.

But it is evident that the defender will seek by every means to provide for the defense of his flanks. This front will therefore include oblique elements covered on their exterior flanks and who can never be successfully opposed by elements of the attacking line if the latter are all parallel and capable only of a fire perpendicular to their front.

As a consequence will not the attacking force be forced to put in position some flanking elements for the purpose of opposing those of the enemy? Moreover, whenever the necessity arises, will it not always be advisable to provide such elements whose fire will cover the advance of the portions of the front subject to the enemy's flanking fire?



This is beyond dispute. If, for example, one section of the line, A..B, has been able to move ahead of the elements C..D and E..F, it will be logical to place at G and H some flanking

elements whose rôle may be very important. It is important to note the following points in this connection:

1st. These flanking fractions of the line must be covered on their exterior flank lest they present a target for the oblique fire of the enemy and be rendered thereby incapable of any efficient action.

2d. They must not form a part of the first line, lest this line thereby present an interval to a part of the enemy's line which thus freed from danger in front could either take up the offensive or facing to the right or left deliver a flanking fire.

3d. While these units are fulfilling their role of flank protection, they no longer retain their offensive mission but have as their task, the delivery of fire. Any forward movement would force them into the field of fire of the units whose advance they are protecting even if the necessity for their protection of the exterior flank had ceased.

These units must be considered as temporarily immobilized, their rôle not differing from that of the defense.

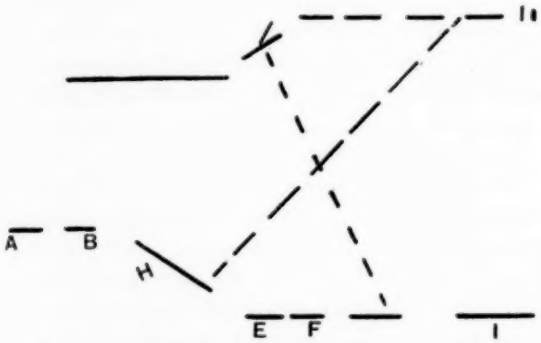
Now how can the attacking infantry, unsupported by artillery or machine-gun fire, advance when, subjected to the flanking fire of the enemy, the terrain is found to be such that this fire cannot be returned?

We shall answer by remarking that the attacker cannot advance against all parts of the line with equal ease. For example, the salients in the enemy's line are its weakest points, the re-entrants the strongest parts. The attacker advances against the latter as well as he can, but they do not form the real objective. It is behind the parts of the attacking line having the greatest chance of success that the reserves will be massed; these are the troops that will supply the flanking elements H which the bastion form of the advanced element AB will render necessary and which likewise will facilitate the advance of the less favored elements CD and EF.

Will it be possible to combine the advance of the elements CD, EF with the fire of the echelons H? This is a very delicate question, since, as we have seen, the flanking elements can only attain fire efficacy if their exterior flanks are covered; that, for this reason, their firing positions are limited as is their field of fire.

The flanking element H, which cannot fire, or at least only

straight to its front, will frequently cover with its fire, therefore a part of the hostile line at I′ which is opposing the element I of our line, distant from H and belonging naturally to another company or another battalion; how can the functioning of these elements be combined?



With us the element I can only act in one way, fighting always the same; direct fire to prepare for the advance, then the rush; the business of H is to suit its fire to the existing circumstances; for example, at the instant that the element I, which is being supported by H, is seen to rise for the rush, then will the fire of H necessarily be heaviest. The combined action of these two elements thus automatically establishes itself without diminishing the efficacy of I which, as a rule, controls the action of the entire mechanism.

There remains to be considered one last case: that in which the oblique element H has no enemy in its front, the result of its flank position in a line of greater extent than that of the enemy.

All is now changed. The exterior flank of H no longer needs the cover of the terrain and its fire will be extremely efficacious.

But should this element be limited to the thankless rôle of a fire echelon? It ought to take as its "enemy" the flank element B′ of the hostile line and charge upon it without firing if possible: for with H as with all the rest of the line, fire is only a means—

A′———B′ H′

A———B /H

it is the bayonet alone that is decisive. Any attempt to combine the action of H and B would only serve to retard the arrival of

these elements at B′ and consequently give the enemy time to arrange for withstanding the attack of H either by bending back the line or by bringing up the reserve.

Here also, except in the case where H has before it an impassable obstacle, any combination of action is useless. The object of each must be to reach forward with all speed, to close with the bayonet; other forms of action are only impossibly complex and not capable of execution in combat—unworthy substitutes leading only to interminable lengths of firing that only hold back the attack.

III.

Up to this point we have not considered the machine gun. Let us now have them enter the dance.

The machine gun, being only a fire element, works not only for itself as does the individual skirmisher, but also for the benefit of certain sections of the front that it can either replace or support. Let us consider the effect of its intervention on the conduct of the attacking line in the few cases where its action will be effective.

1. *Hostile machine guns.*—If the machine gun holds a considerable extent of the hostile line it is evident that the portion of the attacking line directly opposite will take it for its "enemy" and that, as a consequence, the fire of this portion of the line will be concentrated on it.

Unless in this exceptional case, especially when the hostile machine gun only supports the line by direct flanking, or position fire, the action of the attacking line is unchanged. The only difference will be that its progress will be rendered much more difficult by the hail of well-aimed bullets. In fact if the attacker cannot call for succor in the shape of supporting machine guns or artillery it is certain that offensive action will be stopped. But let us note that machine gun action is only local whereas the offensive movement extends along the entire front.

2. *Friendly machine guns.*—Here we have the same rôle and the same results since the circumstances are the same. When the situation is favorable to their use they will be able to bring about a complete cessation of fire at certain portions of the enemy's line. But the question is to know what effect their

entrance into the fight will have upon the morale and the functioning in the combat of the individual and in the conduct of the groups.

There are some dreamers, indeed, who expect that a minute regulation of the co-operation between machine guns and the advancing troops can be effected. The group commander, they say, should be informed of the time when the machine gun may be expected to commence firing in support of his group. He waits for this moment and when it is at hand executes the rush with his group while the machine gun annihilates the opposing fraction of the enemy's line with a fire which does not cease until the rush is completed. It then becomes the turn of the next section of the line to advance, and thus the forward movement of the whole line by fractions is effected mechanically.

The difficulty of carrying out such a system is apparent at once. As the machine gun produces neither smoke nor dust the operation of this scheme must be minutely provided for in advance; the group commander never being able to see when the moment for the rush is at hand must be directly informed of it. And above all, are we not detracting from the aggressive mission of the attacking line when we make its forward movement dependent upon the action of an agent which is not an integral part of it?

In the proposed system the combination of functions establishes itself much more simply: the machine-gun commander having received orders to beat a given section of the hostile front, surveys the position and prepares to go into action. As soon as it becomes necessary he at once rakes the enemy's line with fire with the object of killing as many men as possible and of demoralizing the rest with the fear of the resumption of the fire. He remains then in observation and watches both the enemy's line and our advancing troops.

The attacking units make no change in their mode of attack. The burst of fire is always followed by the rush as soon as the possibility of effecting it becomes apparent; the machine gun commander, who sees the movement, opens fire as soon as the advance commences and keeps his pieces in action as long as necessary. He then resumes his observations and stands ready to support again every new advance against the portion of the hostile line in his field of observation.

There is no running about of orderlies, no waving of signal flags. The two functions harmonize themselves naturally.

Our attacking line has been concerned thus far only with musketry fire; let us complete the picture by introducing the artillery.

We recall at once that as compared to the fire of infantry, which covers a wide front and has a deep beaten zone, artillery fire is quite localized, and that consequently, at certain portions of the front and sometimes over the entire front, the attacking line will neither be subject to nor supported by artillery fire. Under these conditions the fight then is simply one of infantry against infantry. The conclusions above cover such a case.

With the introduction of the artillery, however, the character of the combat is changed. First, we ask what can we in the attacking line do against hostile artillery? In general nothing, or almost nothing, with our fire, on account of the great range to the artillery position, its invulnerability, and also because our attention is occupied by the hostile infantry.

On the other hand, the choice of lines of approach and positions which enable us to avoid the severest losses from infantry fire likewise afford us protection from the fire of the artillery.

The most marked effect of the enemy's artillery fire will be its influence on the morale of the attackers who, if not veterans, will show their fear of these death dealing projectiles that crash down among them.

If this fire is brought to bear upon us obliquely its results will be still more effective and it is certain that where the terrain does not give us cover our advance will be possible only when our batteries come to our support.

So much for the hostile artillery. It remains for us to consider the measure of support that we may expect from our own and to arrange a method of synchronizing its action with ours.

There is a distinction to be noted here. We know, of course, that according to their mission our batteries are classified in three groups, more or less permanent, according as they have had assigned as objectives, the counter batteries, infantry batteries, or hostile infantry.

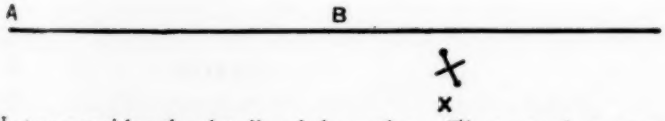
The action of the first of these groups does not directly interest the attacking line: therefore as it lies outside the scope of our study we mention it only in passing.

The hostile infantry, however, act directly against the attacking line. Whence arises the necessity of co-ordinating the action of our infantry batteries and attacking infantry. It is proper to note, though, that the hostile infantry batteries will generally come into action at long range and seek opportunities for oblique fire. On this account the infantry will not see the details of the contest waged between these batteries and ours—we will only perceive its effects.

The co-ordination of functions in this case is not therefore a problem for the infantryman; this is the artillerist's task alone. The latter, his fire once adjusted, must be in readiness to act every time that he sees his own infantry exposed to the fire of hostile batteries.

Only the artillery classified above in the third group remains to concern the attacking line and it is the action of this group that we must seek to harmonize with the fire and advance of the infantry.

A new fact comes in here to make the concordance of function relatively easy to bring about. The fire of the infantry is invisible; but the projectiles of the artillery produce an abundance of smoke. The rifleman in whose front the artillery will produce its effect, will see "with his own eyes" the friendly projectiles bursting along the enemy's front as the attacking line draws nearer. For this reason the leaders of the attacking units will have no difficulty in observing the action of the artillery and of impressing their knowledge of its effect on the individuals under their command.



Let us consider the details of the action. First, at what moment will the battery X (see fig.) charged with the support of the attack, open fire against A′ B′?

Evidently, only as late as possible in the combat and only at the instant when need of its support is felt. Its supply of ammunition is limited and moreover its fire will probably draw an outburst of fire from the hostile artillery which will inflict upon it useless losses.

The line A-B will therefore advance as long as it can by its own means; the battery X already in position, will profit by this respite by preparing all the elements of its fire, ranging volleys excepted. But when the time arrives to come to the assistance of A-B, X will immediately go into action and proceed first of all to fire a ranging volley.

The prime effect of this will be, however, to show A-B that it is not alone and that it can rely upon its battery for support.

Certain extremely complex rules have been laid down to be followed from this stage of the combat to insure co-ordination. Their object is to cause X to support successively the advance of each of its units in the line A-B with a fire that would be the signal for the unit supported to fire and then rush, and which would continue as long as the advancing unit kept up its forward movement. We thus have a well regulated mechanism, beautiful in theory but which would appear to be better suited to the domain of mathematics than to the battlefield with its infinite variety of situations demanding new methods at every turn and above all involving the psychic influences produced by the elements of horror and anguish.

Every system with such a mechanical basis will be disrupted on the battlefield and communication and co-ordination lost.

Under the scheme we propose, when the co-ordination as a whole has been gained through the orders of a common commander, the co-ordination of details will follow entirely from the fact that the infantry battery, that is to say its captain, must see both the enemy's line and that part of our line which is attacking it.

The essential thing is to decide to whom shall belong the initiative. Will the fire unit prepare the way for the movement of the attacking unit or will the latter evoke the fire of the supporting artillery?

The writer believes that there is no necessity of having a fixed rule for this. If the artillery at a certain moment sees a favorable opportunity for inflicting losses on the enemy's line it should not

hesitate in the absence of other indications to open a fire which will in its turn cause the advance of the friendly line.

But we do not admit that this will always be the case. To do so would be to sweep away with one stroke the aggressive ardor of the attacking units; every part of the line not protected by friendly artillery fire would believe itself justified in delaying its advance.

For this reason we do not wish to change our method at all and we find in the general case the desired co-ordination brought about as follows:

The line A-B has seen the friendly artillery train its fire on A'-B'. On this account new hope is infused in the attackers and in the same proportion they feel that the morale of A'-B' has been lowered. The leaders of A-B take advantage of this opportunity to get their men in hand and above all see the possibility of a renewal of the advance.

Always the same procedure: the short burst of fire, then the rush; the battery X, after its ranging volleys, is waiting "finger on the trigger" and there is no delay. As soon as a section of our line rises to go forward its (the battery's) fire commences to beat the ground ahead and this fire is maintained as long as our advance continues.

The better the view that the battery commander has of the line A-B the easier will it be in every case to secure co-ordination. For he will thus be able to act as soon as the fire of A-B commences and consequently launch his own fire before its rush commences.

But it always seems to us essential that the infantry, "reine de la bataille," must not delay its own action by waiting for the support of some other arm: better of course that the projectiles of the artillery should precede its steps, but it is not for the artillery to indicate the time for, or the extent of the rushes.

V.

Conclusion. In the offensive it is the attacking line that is the vital and important element. Most assuredly its proper handling calls for the best judgment, involving as it does the problem of constant reinforcement and support by temporarily specialized infantry fire units, machine gun and artillery fire.

But the control of the line lies only in the hands of its im-

mediate chiefs on the firing line. It is for them alone to maintain the fighting spirit of each combatant, the eager desire to close with the bayonet. To reach this hand-to-hand stage of the combat each assailant glancing neither to the right nor left, nor rear, must always fix his attention straight to the front on the very eye of "his enemy."

In this hand-to-hand combat we have a reappearance of the most antique style of fighting. Along the whole attacking front, which is advancing against the enemy, each of the combatants in the face of his adversary utilizes, as of old, his own shield, the fire of his rifle, in order to brush aside the defense of his adversary and then, victorious. implant his trusty bayonet in his opponent's throat.

The Defence of Localities Against Aerial Attack.*

By Colonel Louis Jackson, C. M. G., late R. E.

I HAVE been moved to an essay on the defence of localities against attack from the air, mainly because the public mind has been disturbed for years by a vague menace, and it is worth while to attempt to lay down in definite terms what the danger is, and what steps are necessary to guard against it.

There are two bogies that are constantly evoked by the writers of magazine articles. One is the sudden appearance of a mighty fleet of aircraft, bearing an invading army; the other, the nightmare possibilities of explosives. We are all familiar with that tiny phial of grey powder, the invention of some Russian or German chemist, which, if dropped on the dome of St. Paul's would suffice to lay London in ruins. Such wild imaginings defeat the object with which many of them are written, because the common sense of the public rejects them, and is prejudiced to the extent of thinking the whole danger illusory.

But there is a danger, although its extent is still quite undefined; and here is at once the object and the great difficulty of my lecture, namely, to discuss the nature of protection against weapons of which we do not yet definitely know, and can only forecast, the numbers and offensive power. As regards the aerial military preparations of other countries there is no accurate information available to us. As regards our own, of course details cannot be given. I must therefore ask your indulgence if, in discussing the effectiveness of various weapons, I can give you very few facts and figures. This, however, I can say, that the state of our own preparations for aerial fighting is more satisfactory than is generally believed.

A demand is often seen in the newspapers for the "supremacy of the air." If by that is meant that whatever hostile action is possible for an enemy's aerial fleets, our own aerial fleets shall be capable of as much and more, that is a realizable ambition. But if it means such an undisputed mastery of the air as our fleets had of the sea 100 years ago; if it means that our

*From the *Journal of the Royal United Service Institution* of Great Britain for June, 1914.

aerial fleets shall be numerous and powerful enough to protect our shores from all insult, from any attack by aircraft, I think that is too much to ask. The wide uncharted spaces of the air can hardly, in our generation, be patrolled to such an extent.

In this connection there is also the question whether the rôle of aircraft should be defensive. As will be seen later, I must make a partial or tentative reservation for particular cases, but speaking generally, I think the action of the aerial fleets should resemble that of the navy. We do not, for instance, tie down any particular ships to assist in the defence of a fortified harbour, because it is better that they should be free to join in a concentration of force at any necessary point; and for the same reason we should not sacrifice the mobility of the new preeminently mobile arm.

If then, we may take it as at all events unlikely for a long time to come, that our own aerial fleets will be able to protect us from all attacks of an enemy's aircraft, it follows that we must make preparations on land in the ordinary way against such powers of offence as their weapons may possess.

Now, before I define what I mean by "localities" and discuss their defence, let us first consider the possible methods of attack. For this purpose it is necessary to look ahead somewhat. For supposing that we deal with the present day alone, it is self-evident that any measures that might be considered adequate to existing conditions, and therefore put into execution, would be inadequate before they were completed, in view of the constant advances taking place in aircraft. At the same time we must not look too far, because we cannot foretell the precise lines along which aerial military science will be developed, and because it can hardly be denied that some measures of defence are already necessary. Although the offensive powers of aircraft are at this moment rudimentary, they are being developed day by day, and we may expect some definite advances in this direction very soon.

Does anyone doubt this? The aerial experiences of the last five years have amply proved that the record achievement of one year is an everyday feat in the next. This is natural, because the conquest of the air is now almost entirely a question of mechanical efficiency; and at this period of the world's history, the cooperation of all the arts and sciences is bringing about advance in all branches of engineering with a rapidity which

would be startling if we had not become gradually accustomed to them.

What, then, is the aerial advance since 1908? Mr. Hearne in his *Aerial Warfare*, published in 1909, summarizes the maximum attainments of dirigible balloons and aeroplanes up to the time as follows:—

	Distance in miles.	Duration of flight in hours.	Speed, m.p.h.	Height attained, feet.
Dirigible balloon	360	13	30	4,500
Aeroplane	56	$1\frac{31}{60}$	40	150

Later on he says, "Aeroplanes so far have not risen above 200 feet, but the Wrights believe that they can rise to 3,000 or even 5,000 feet."

To-day, in April, 1914, the range of a modern Zeppelin at full speed is estimated at over a thousand miles, and an aeroplane has been flown across the Mediterranean, from Frejus to Tunis. The possible duration of flight of a dirigible is more like three days than half a day; and an aeroplane has remained longer in the air than the balloon could in 1908. The speed of dirigibles is 50 miles an hour, and we have aeroplanes that can travel at 90. A dirigible balloon recently ascended some 10,000 feet, and the height record for aeroplanes is somewhere about 20,000 feet. Scarcely a week passes without some new record being announced, and there is a continuous and steady advance in structural efficiency, in engine power, and in the number and experience of aviators.

In view of these facts we cannot but expect an equally definite and continuous advance in the immediate future; and I propose to look forward three years, to 1917, and assume that the leading nations will have arrived by that time at a certain stage of offensive power. My reason for fixing that period is not only that it seems to allow a sufficient time for experiment and the subsequent construction of a fair number of fighting aircraft, but also that any defensive measures we may contemplate now, or at any rate most of such measures, will not be completed before two or three years have elapsed; and should, therefore, be framed with regard to the requirements of the immediate future rather than of the present.

What, therefore, are we to expect in 1917? Taking airships first, it appears from the reports of the *Times'* special corre-

spondent of last year, that both Germany and France had already built or on order, a certain number of dirigible balloons of 1913 patterns, with a lifting power of between 20 and 30 tons, and speed of from 45 to 50 miles an hour, or rather more. The earlier balloons still existing may be dismissed from consideration, both because of their inferior power, and because the life of a balloon is at present estimated at four years; though no doubt more durable vessels will gradually be evolved. If the four-year limit holds good for 1913 patterns, none of the ships built last year will be useful for war purposes in 1917; but their places will be taken by larger and swifter craft. Germany is now reported to be ordering ships of well over 30 tons lifting power, and France has apparently no intention of being left behind in the race. They are still working on experimental types, but it seems probable that there will come a limit to the development in size, if only on account of the housing question. For every airship there must be a shed, and the cost of these sheds is considerable. If the life of an airship is to be taken at four years, the cost of replacing it will be much reduced if the new airship can be housed in the old shed. There are also many other questions, besides increase of power, which have to be solved in the coming years, and owing to the time required for building an airship, experimental results are much less quickly obtained than with aeroplanes. It therefore seems likely that when a satisfactory ship is produced, with all the carrying power necessary for crew and propulsion and offensive purposes, which may perhaps be put at something under 40 tons, there will be no advance in size for some years.

Allowing, therefore, for certain moderate advances, let us assume that in 1917 France and Germany will each have fleets of some 40 or 50 airships, most of which will have a carrying power of 40 tons, and a calm weather speed of 60 miles, with a range of 1,500 miles. This, I must say, is an assumption without any definite grounds, and is based on the rate at which they are now being built, and on the hypothesis of the continued popularity of the airship. There is, of course, a strong body of opinion that the day of the airship is already past, because of the coming of the armed aeroplane. That opinion may prevail, though it is not likely to do so until the armed aeroplanes have given some demonstration of their efficiency. In any case we

may reckon on the leading nations having each a dozen or so of airships, of the patterns now being built, available in 1917. These vessels would be able to drop a ton of explosive in one charge, or a proportionate amount of light or heavy bombs. They would be armed with light Q.F. guns, or perhaps with special bomb guns. Operating at considerable heights, practically out of rifle range, though not out of gun range, they should be able, from a stationary position over the target, to drop projectiles with fair accuracy. At night, if unopposed, they could come down close to the object and drop the big charge with an excellent chance of hitting.

Turning to aeroplanes, we find that a good military machine of to-day, carrying a passenger, can travel at 75 miles an hour for about six hours without stopping. Such a machine is already very valuable for such purposes as reconnaissance, but it has no offensive power. The class of military aeroplane that we can expect to have in the near future would have a speed of not less than 75 miles an hour, a range of at least 500 miles, be armored to resist small-arm fire, and have a crew of two or three, and a machine gun. For the latter might be substituted bomb-dropping arrangements, or if the armor were omitted, a pom-pom. Judging from the progress already made, it seems more than probable that such machines will be in use by 1917.

As regards numbers, it is impossible to say what the future may bring forth. If we assume that the leading powers will be satisfied with a total of 300 or 400 machines, we shall probably be under the mark. Of these, however, the majority will be for scouting and similar purposes, and need not be armed.

The fact that a fighting aeroplane will usually engage at short range will allow of the use of a great variety of missiles: automatic rifles, pom-poms, rifle grenades, fire arrows, explosives and incendiary bombs can all be used. Fair results have been obtained with rifles, and already it is probable that a duel between two aeroplanes carrying rifles would very quickly have a definite result. The rifle grenade will be a deadly enemy to the balloon. Bombs of 100 lbs. weight and more can be safely dropped, but no very great results in accuracy have yet been attained. Practice may perhaps do something. An aeroplane is an unstable shooting platform, but so is the back of a galloping horse, and there are plenty of men who can make good

shooting on horseback. The important difference between the cases of the dropped bomb and the revolver bullet is the velocity of the projectile. An aeroplane dropping a bomb may be passing over the target at the rate of 90 feet a second, and this is a serious factor when the bomb has only the velocity due to gravity. The designer of sighting apparatus has several handicaps. Neither the exact height nor the exact rate of travelling over the target can be known, and there is difficulty in getting a true vertical. There is also the question of side winds. These difficulties can be very greatly decreased by giving an initial velocity of several hundred foot-seconds to the bomb, and I expect that bomb-dropping will soon give place to bomb-shooting, and that good results will then be got.

Now if such will be the forces and the weapons possibly disposable for war, we still have to consider what use will be made of them; or, in brief, for the purposes of this lecture, whether a nation at war with us would be able to spare any aircraft from the service of the fleets and field armies for the attack of this island. We know what is a suitable proportion of guns per thousand rifles, but we do not yet know what proportion of airships or aeroplanes employed with the fleets and armies in the field would give the best results in efficiency and economy.

If we alone were fighting with one of the great Continental nations, this question would only apply to the service of the fleets, unless the enemy succeeded in effecting a landing, and until then no doubt both sides would have some aircraft to spare for offensive purposes. If we had a Continental nation allied with us, it is probable that very few aircraft could be spared from the fighting lines at sea or on shore; still the enemy might be able to provide one or two dirigibles and flights of armed aeroplanes to attack us at home, if it was thought worth while.

Let us assume for the sake of discussion that in either case there is a possibility of our being attacked from the air, and that the attack at a given point might be delivered by a dirigible, or a flight of aeroplanes, or by both acting in concert. We have also assumed that the enemy's dirigibles will have a range of 1,500 miles and his aeroplanes of 500 miles, with certain powers of offence. In connection with the question of range,

we must remember that it is not necessarily essential to the enemy that his aeroplanes should be able to get home after achieving their mission. The case is slightly different with dirigibles, which the enemy would be unwilling to sacrifice except for a very important object. Another thing tends to limit the action of dirigibles. If they come over by daylight they would run a great risk of being seen and destroyed by aeroplanes. If this danger deterred them, their range outside their own country would be limited to what they could run by night: say, 400 or 500 miles.

A glance at the map will show that as far as the question of range is concerned, there will be nothing to prevent attack. And though I have spoken only of these islands, it should be remembered that we have also abroad great maritime fortresses which are easily within range of a possible enemy, and whose defence against aerial attack is of the first importance.

If all that I have assumed so far is granted, we have arrived at this point: that in about three years from now a great many of our vulnerable points will be exposed to a possible attack from the air, and that the attack may take the form of large or small bombs, explosive or incendiary, light shells and bullets. These vulnerable points are the "localities" to be defended, and they include such fixed points as would be likely objects of attack, *e.g.*, coast batteries, dockyards, magazines and stores, ammunition factories, oil reservoirs, wireless stations, and great centres of population.

In considering the defence of these points we have to remember the three elements of defence, namely, Offence, Protection, and Concealment. One or more of these elements may be applicable in each case. The offensive defence, in the case of aircraft, lies with other aircraft or guns. Protection may be either something that is frankly bombproof, or some protective covering that will arrest the descending projectile and prevent it from exploding near enough to the object to do harm. Concealment may be complete or partial; and a form of partial concealment lies in dispersal.

Now, in the application of two of these elements we have to deal with uncertainties. First, as regards guns, we do not yet know what they can do against aircraft. Many people think they will be ineffective, on account of the uncertain height

and pace of the objective. My own opinion is that with a properly designed vertical fire gun, which should be as easy for the gunner to aim and swing as a shot gun, a very good degree of efficiency will be attained. Given a high muzzle velocity, which is essential, a dirigible hovering within dropping height (say, anything less than 5,000 feet), should be an easy mark. As for aeroplanes, shooting at them will be just like game shooting, when a suitable projectile has been found. The aeroplanist will hardly attempt bomb-shooting at a greater pace than 80 miles an hour—probably much less—and in exchange for his pace he has to come close down to the target, say, to 600 feet. Compare the case of the flighting duck. It comes over the sportsman at about the same pace, and perhaps 50 feet up. The man does not know at exactly what pace it is travelling, nor just how high it is, but if he is a good shot he hits it; and he has about a second and a half of time in which to do it, from the time when the bird comes within range till it is over his head. The aeroplane being twelve times as high, the gunner would have 18 seconds under the same conditions, but really more, because his range is longer, and that ought to be enough for him. Two things are necessary; first a suitable projectile, having regard to the fact that the vital parts of the aeroplane will be protected; and second, constant practice. What an opportunity for specially enlisted gamekeepers!

Even if the gunner missed, he would probably cause the other man to miss. I have said that with a suitable gun, and plenty of practice, it is probable that fair results in bomb-shooting may be arrived at; but that would be against an unprotected target. It would be a very remarkable aviator who could produce his best shooting 600 feet up in the air with bullets and splinters flying all around him.

Of course, there are difficulties for the gunner. The most absolute vigilance is required, because he must be ready and waiting behind his gun when the aeroplane comes within range. He does not know in what grey dawn, or sleepy dinner hour, or quiet twilight the enemy may come. The attack may be from any side, though he will know that with bombs the enemy would prefer to come straight up or down wind. If there is high ground close by, the aviator may seek to use it as cover, though here again he might pay for his cover by disturbance

from air currents at the critical moment. In any case the gunner must be always ready, and if the gun cannot be on a commanding site there must be a look-out, and thus a double vigilance is necessary. This may be ensured at the beginning of a war, but would be difficult to keep up.

Considering everything, I believe the gun is the most effective defence against aerial attack; that it would not only tend to defeat the attack, but in most cases stave it off; but it is probably the most expensive. The actual cost of the gun may be only £1,000 or £1,200, but a crew of six men at two reliefs would cost as much as that yearly, and the cost of a large quantity of practice ammunition must be added. Again the aeroplanes would probably not come singly but in flights, so that several guns would be necessary, according to the size and importance of the object.

There is uncertainty also in connection with the element of direct protection, because we do not know what nature or size of bombs may come into use. Protection is easy enough for a small building such as a magazine, because five feet of earth will keep out any ordinary bomb, but with many buildings earth is not applicable. A bomb-proof roof is a very heavy and expensive thing. If designed to keep out a 10-lb. bomb, it might be attacked by one of 100 lb. If calculated for 100 lb., and not protected by guns, it might have to meet a still heavier bomb from a dirigible.

Netting, again, has been thought of, but its supports would be expensive, except on a very small scale. And here, again, what are we to allow for? Torpedo netting will keep out a 100-lb. bomb dropped from a considerable height, but it would probably not do so if the bomb was provided with a cutter.

Guns cannot be effectively protected unless one frankly adopts the cupola system, and that would not be worth while against aerial attack alone.

Let us now take the vulnerable points that have been mentioned, in order, and consider what seems to be the best defence for each.

Coast batteries might be attacked by aircraft in cooperation with a naval attack. The attack of batteries by ships has usually been considered rather improbable. It would be much more probable if effective help could be given by aircraft, either

by putting guns out of action or by causing loss and confusion among the personnel. There is another important point. Naval guns are practically always superior to battery guns in range and weight, because they are always being brought up to date, whereas the battery guns are only renewed at long intervals. Hitherto the superiority of range has not been of much use, because at extreme ranges the effect of the fire could not be observed. With the help of observation by aircraft, however, the ships might be able to shell the batteries without any possibility of effective reply.

For the latter reason it is essential to keep the enemy's aircraft at a distance, and this must be done by guns. If the question is asked, why not defend by aeroplanes? I would reply that while there would no doubt be a patrol service of aeroplanes along important stretches of coast, it would not be well to keep numbers of them sufficient for fighting purposes immobilized at all our defended ports. The vertical fire gun is the natural weapon of self-defence for a battery, and if it can keep the enemy's aircraft at a distance the necessity for any other kind of special protection for the battery disappears.

As to the number of guns necessary, we must consider that an attack would be delivered possibly by flights of ten aeroplanes. The guns must be close to the objects they are protecting, and perhaps two for a small group of batteries would suffice. They should be placed centrally, along the highest ground available.

With Dockyards we have to consider especially the danger of incendiary bombs. Really serious damage to a big dockyard would be an object worth sacrificing a dirigible for, and as long as dirigibles are being built, the danger of this form of attack must be reckoned with.

Now, if a first-class dirigible arrived by night over a dockyard, what could she do? If not interfered with, she could come low down and drop a really large charge of explosive on to any battleship that might be there, building or refitting. By lowering the charge with a steel cable and an electric release, she could make even more certain of her object. From a greater height she could distribute a large number of incendiary bombs over timber-yards, stores, etc., with a few explosive bombs for moral effect. The result might easily be very serious.

How is this to be prevented? Given a dirigible with the

range and speed above predicated, I doubt if it would be possible, by any system of aerial patrol at night, to prevent her arrival and the commencement of the attack. If that is so, the thing would be to beat off the attack as soon as possible, but the problem is a very difficult one. The balloon must be driven away, either by vertical fire guns, aided by searchlights, or by aeroplanes. Both could not be used together. The guns could probably prevent the balloon from coming low down. If she stayed 5,000 feet up and moved about dropping bombs, could they find her with a searchlight, and hit her? If so, that seems an easier and quicker form of defence than by aeroplanes rising to fight her.

Or should there be an organized aeroplane patrol at night? Flying is more difficult at night than in the daytime, but we are told that they are practising it in France to guard against dirigibles. Shall we lay this additional burden on our airmen? If it is asked of them they will certainly do it.

The question needs consideration, and is no doubt getting it. A dockyard is a large object to hit, and twenty simultaneous fires would overtax the resources of the fire-brigade. Direct protection is not possible. You can give a measure of protection to a ship by netting, but you cannot roof over a whole dockyard. The main point is that a dockyard is worth special and expensive measures of defence.

Arsenals differ slightly from dockyards in the fact that there are buildings where certain explosive stores are manufactured, which are in themselves a source of danger, and the loss of which would affect our ammunition supply. Such buildings require special consideration. It is our practice to give them light roofs, to minimize the effect of an explosion from inside, but it may be necessary to depart from this practice and give them protection overhead. Steel netting would keep up the light roof principle, and might arrest or deflect a bomb, but there is a danger that the flash of the explosion would get through the light roof. Complete protection is of course heavy and expensive. If it is decided on, there are methods of getting the necessary result with the minimum of material, but it is better not to enlarge on them here. When I speak of complete protection, I do not of course allow for a one-ton bomb, which no roof would keep out: but it would perhaps be difficult for a

dirigible at a good height to pick out and hit the particular building she wanted in an arsenal. Apart from these special buildings, whatever arrangements were decided on for a dock-yard would apply to an arsenal.

Stores of explosives and ammunition. Those which are kept in batteries are already in bomb-proof magazines. Small local stores, not bomb-proof, are not worth aerial attack. Where, however, large reserve stores are collected together, attack may be expected. We have one or two such places, no doubt well known on the Continent. A number of stores grouped together form a large target worth attack, and not easy to miss.

I have not had the opportunity of going closely into the matter, but I believe it would be altogether too expensive and cumbrous an affair to make these stores bomb-proof, nor are they suitable for defence by guns, both because the chances of the aviator are much increased by the size of the target, and because in out of the way spots with small personnel one cannot rely on extreme vigilance. The store sheds might be turned to other purposes, and the explosives either put under ground or dispersed in small stores with the usual earth banks round them. The latter would in most cases be the cheaper and better plan.

The principal ammunition factories might be subjected to an aeroplane raid. I doubt if they would be considered suitable objects for dirigibles. They cannot well be efficiently bomb-proofed, nor can they be concealed; therefore the only suitable form of protection seems to be the provision of a gun or two. This does not seem to be at the present moment an urgent question, and it might be left for decision until the general aerial policy is further developed.

Oil reservoirs, as they stand, are very attractive targets for bomb-shooting aeroplanes. There are two sources of danger in them. First the loss of the oil, which is essential to the fleet. It will be remembered that some oil reservoirs were fired a few days ago at Tampico, by Mexican gunboats shelling the city. Second, the danger of conflagration, if the nature of the damage to the reservoir is such that the burning oil can flow out freely. Imagine a large oil reservoir near the Thames, discharging its contents in flame over the river.

It seems that to safeguard the oil, naval reservoirs must be protected. The most practical method in most cases would be

to construct lined concrete tanks half under ground, using the excavated earth to cover over the tops and render them bomb-proof. I say lined tanks, because although concrete can be made waterproof, I am not sure if it can be made oil-proof.

Large oil reservoirs not belonging to the Government should be so designed that burning oil escaping from them should flow away somewhere where it could do no damage.

Wireless stations would easily be destroyed by bombs. They can neither be bomb-proofed nor concealed. It remains therefore to decide in the case of each one, whether it is worth while to protect it with guns.

Of the great centers of population, London is for us the prime object of consideration. Destruction and panic in the largest of provincial towns would cause trouble, but need not affect our national policy. London in this respect stands alone, that it is not only the habitat of a large fraction of our whole population, but the seat of Government, the centre of our financial and business systems, and the nerve centre of our military and naval forces. A serious blow aimed at London would be more effective against the national life than in any other capital of the world.

We are now, beyond doubt, face to face with the new era in war. If you have granted my assumptions with regard to the range of action and offensive power of the aircraft of the immediate future, those assumptions must hold good for one object as well as for another.

How is London affected by them? General Delacroix, in an article in the *Daily Mail* of the 11th September last, wrote: "Even admitting that a Zeppelin were to pass over the English country side, it is not easy to see what result would be effected, for even in time of war it would not be permissible to drop explosives into unfortified towns." I have no wish to be an alarmist or to make anyone's flesh creep, but I am not prepared to accept this dictum, even from so eminent an authority.

The idea of not bombarding unfortified towns had its origin many years ago, in the time of perpetual frontier warfare in Europe; and, like most of the rather artificial conventions of that time, rested on mutual convenience. An unfortified town in those days was not of much importance one way or the other. It was not expected to offer any resistance. If it was spared

bombardment, the enemy in return expected to occupy it without any trouble, and take full advantage of its conveniences for billeting, supplies, and so forth.

If a Geneva convention were sitting now, and the point were to be raised that a capital which is easily accessible to the enemy may claim exemption from attack on the ground that it is unfortified, would not the answer be "Yes, provided that it is prepared to submit, and not offer resistance to the enemy's armed forces"? And whether the armed force takes the form of troops ready to advance, or of the power to destroy resistance by attack from the air, the principle is the same. After all, war is a game that governments play to win, and we could hardly expect the most chivalrous enemy to refrain from striking a blow at the heart of the country, merely because we have chosen to leave it unprotected. Can any student of international law tell us definitely that such a thing as aerial attack on London is outside the rules; and, further, that there exists an authority by which the rules can be enforced?

No doubt it would be a very unkind thing, and would give rise to many letters in the *Times*, to cause, for instance, an extensive conflagration among the houses of peaceful citizens. But how, if many of the citizens are Territorials, and some of the buildings contain warlike stores? If a flight of aeroplanes passed over the city, each one dropping a dozen incendiary bombs in different places, would not the result be more than the fire-brigade could cope with? If a Zeppelin dropped half a ton of guncotton on to the Admiralty and the War Office, as she might do if not interfered with, what would be the result, in disorganization and discouragement? What would be the effect of cutting off the water supply of the East End, or sinking food-ships in the Thames? These things seem incredible to us, who have only known of wars on the frontiers. I confess I am reluctant to go the length of my own arguments, but if it is conceded that London is within the range of action of a hostile Zeppelin or two, and a flight of aeroplanes, such action will soon be possible; and this is the age of the "knock-out blow" in everything. Would any ruler harden his heart to such action? Who can say? The question seems to hinge on the ultimate results to be expected. If it seemed probable that such panic and riot would be caused as to force the Home

Government to accept an unfavorable peace, then perhaps it might be done. For any less object the odium would perhaps not be incurred.

There is, of course, the question of the influence of London's financial relations with other countries; but if that influence did not avail to prevent war, it would not prevent the blow at the heart.

It seems to me that we cannot help accepting the fact that in three years or less London will be exposed to the form of attack I have indicated. What is the defence? In the first place taking into account the size of London, it seems that no system of aerial patrol could prevent an attack by a dirigible balloon. A deliberate attempt to destroy a given building might perhaps be prevented; but if the balloon's gas were exploded and she fell in flames with all her cargo of explosives, the remedy might be as bad as the disease. Aeroplane attack on London is feasible, but is not so formidable nor so easy. Aeroplanes coming by day might be seen and engaged by our own patrols. As for night attack, I should think that manœuvring over London in the dark would be a dangerous task in present conditions. Perhaps some aviator will tell us if it is practicable, and if not, whether it is likely to become so. In brief, however, I do not think that any system of patrolling can entirely prevent aircraft from reaching London, and doing damage when they get there. The only practical way of meeting this danger is to provide enough of our own aircraft to make it at least difficult and risky for the enemy's craft to get through, and to be able to undertake a vigorous offensive. If no measures of actual defence can protect our capital with certainty from a dangerous attack, then the remedy must be found in offence. Armed aeroplanes are the natural balloon destroyers, and I think they should be provided in sufficient numbers to hunt their quarry out of existence.

Other centres of population and manufacture are not, I think, likely to be attacked.

Now, to sum up, I think we may say that the defence of objectives of small area, such as batteries and stores, against aerial attack, is easy, though it will cost some money. The defence of those of large area, and especially of the capital, cannot be relied on except by an active offensive. As regards

London, there will be very many who will think that I have overstated the case. Some will say that such forms of attack as I have indicated would be ineffective in any case, and they will point to the bombardment of Paris in 1870. I have until recently always been inclined to that view myself, and of course as a fortification engineer I have always held that mere bombardment, however severe, was no justification for the surrender of a fortified place. But the evolution of missiles of war has gone a very, very long way since 1870; and the case of London, with its enormous population and its concentration of various interests, is different from that of an ordinary fortified town. Hostile action against it would not have much direct effect on our operations of war, but I do not believe that anyone can assign a limit, high or low, to what the indirect effect might be.

Another school will take me severely to task for accepting such a possibility as the use in the twentieth century of incendiary projectiles against an unfortified town. I may be quite wrong; I can only say that if I were responsible for the defence of the country, and knew that a possible enemy had such a weapon to his hand, I should take account of it. The possible danger is there; the safeguard against it—it cannot be too often repeated—is offensive action.

When we consider the effective powers of the dirigible balloon together with the difficulty of warding off its attack, we must allow that there have been few more potent instruments of destruction known to history. On the other hand, of all the weapons of war ever devised by man, this is by far the most fragile and most vulnerable. I believe that whatever the future of the dirigible may be for all the uses of peace, in a few years time no one will think of employing it for war. Still, for the moment, there it is, and it must be provided for.

It is satisfactory to think that, for such action as may be necessary, we have the right human material. The men who are striving for the mastery of the air now are of the same adventurous type as those who, a century or two ago, mainly for sheer love of danger, spent their lives as professional soldiers on the battle-ground of Europe. Those ancestors of ours were happy in this, that if their lives were often cut short, they had at least lived them to the full. But what makes the airmen a class apart, and entitles them to our admiration and regard,

is that at a period when an exaggerated value is placed on human life, they incur from day to day, in time of peace, the risks of active service, without the excitement and the possible rewards of war.

The air service of the future will call for the very highest qualities of nerve, gallantry and self-devotion; and when the call is made, the men who inherit the traditions of the Royal Navy, and those who keep the Marches of the Empire, will respond.

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ATTACK FROM THE AIR.

The Enforcement of International Law.

To the Editor of "The Times."

Sir,—In his interesting and important address at the Royal United Service Institution Colonel Jackson inquired: "Can any student of international law tell us definitely that such a thing as aerial attack on London is outside the rules; and, further, that there exists an authority by which the rules can be enforced?" As one of the students to whom the Colonel appeals I should be glad to be allowed to reply to the first of his questions.

The "Geneva Convention" mentioned in the address has, of course, no bearing upon aerial dangers. The answer to the question is contained in the, now generally ratified, Hague Convention, No. IV. of 1907. Article 25 of the regulations annexed to this Convention runs as follows:—"It is forbidden to attack or to bombard, *by any means whatever* (*par quelque moyen que ce soit*), towns, villages, habitations, or buildings which are not defended." It clearly appears from the "Actes de la Conference," *e.g.t.i.*, pp. 106, 109, that the words which I have italicized were inserted in the article, deliberately and after considerable discussion, in order to render illegal any attack from the air upon undefended localities; among which I conceived that London would unquestionably be included.

I cannot venture to ask the hospitality of your columns for an adequate discussion of the gallant officer's second question, as to the binding force attributable to international law. Upon this I may, however, perhaps venture to refer to some brief remarks, addressed to you a good many years ago, and now to be found at pp. 101 and 115 of the new edition of my "Letters to *The Times* upon War and Neutrality (1881-1913)."

I am, Sir, your obedient servant,

Oxford, April 24. T. E. Holland.

THE HYPOTHETICAL CASE OF LONDON.

To the Editor of "The Times."

SIR,—I am much indebted to Professor Holland for his courteous note on this subject in *The Times* of the 27th inst.

This distinguished authority tells us that by Article 25 of the Regulations annexed to The Hague Convention, No. IV. of 1907, "It is forbidden to attack . . . by any means whatever, towns, &c., which are not defended"; and that this was intended to render illegal any attack from the air upon undefended localities, among which, in his opinion, London would be included.

Under this Article, however, London would only be safeguarded from attack if "not defended." A definition seems to be required. There is no mention of fortifications, which are concrete facts. When is a town "not defended"? I presume when it submits, without any opposition, to the authority of the enemy. A fortified town might not be defended; in that case it would not be bombarded, but the enemy would take peaceful possession. An unfortified town might offer a strenuous resistance, in which case it might suffer severely. Is it conceivable that London, if attacked, would not be defended?

In order to arrive at the true value of the Hague Convention as a protection for London, I will put an extreme case. The commander of an enemy's war-balloon might arrive over London, if unopposed, and signal, as a matter of courtesy, "I am going to drop explosives." We answer, "You must not drop explosives; we are not defended." The commander replies, as it seems to me, quite logically, "Then you surrender. Good. You will now obey orders."

I have no wish to be an alarmist, because I am not alarmed as to the future. In touching on this question in my lecture at the Royal United Service Institution I merely wished to draw attention to a coming source of danger. London has hitherto been supposed to be protected from attack by our fleets and armies. The new factor in warfare will shortly make a direct attack on London possible within a few hours of the declaration of war. The Hague Convention, as worded, does not appear to provide an adequate safeguard.

As regards the "binding force attributable to international law," I will gladly avail myself of the reference which Professor Holland has been good enough to give to his "Letters to *The Times*." May I, however, venture to say that no law can be very effective without force behind it, and that we do not yet appear to be approaching the era of international police?

I am, Sir, your obedient servant,

London, April 28. LOUIS JACKSON, Colonel.

THE RULES OF INTERNATIONAL LAW.

To the Editor of "The Times."

SIR,—In reply to Colonel Jackson's inquiry as to any rule of international law bearing upon aerial attack upon London, I referred him to the, now generally accepted, prohibition of the "bombardment, *by any means whatever*, of towns, &c., which are not defended." This rule has been growing into its present form ever since the Brussels Conference of 1874. The words italicized were added to it in 1907, to show that it applies to the action of *aéronefs* as well as to that of land batteries. It clearly prohibits any wanton bombardment, undertaken with no distinctly military object in view, and the prohibition is much more sweeping, for reasons not far to seek, than that imposed by Convention No. IX. of 1907 upon the treatment of coast towns by hostile fleets.

So far, good; but further questions arise, as to which no diplomatically authoritative answers are as yet available; and I, for one, am not wise above that which is written. One asks, for instance, what places are *prima facie* "undefended." Can a "great centre of population" claim this character, although it contains barracks, stores, and bodies of troops? For the affirmative I can vouch only the authority of the Institut de Droit International, which in 1896, in the course of the discussion of a draft prepared by General Den Beer Pourtugael and myself, adopted a statement to that effect. A different view seems to be taken in the German "Kriegsbrauch," p. 22. One also asks:—Under what circumstances does a place, *prima facie*, "undefended," cease to possess that character? Doubtless so soon as access to it is forcibly denied to the land forces of the enemy; hardly, to borrow an illustration from Colonel Jackson's letter of Thursday last, should the place merely decline to submit to the dictation of two men in an aeroplane.

I read with great pleasure the colonel's warning addressed to the United Service Institution, and am as little desirous as he is that London should rely for protection upon the Hague Article, ambiguous as I have confessed it to be; trusting, indeed, that our capital may be enabled so to act at once in case of danger as wholly to forfeit such claim as it may in ordinary times possess to be considered an "undefended" town. Let the principle involved in Article 25 be carried into much further detail, should that be found feasible, but, in the meantime, let us not for a moment relax our preparation of vertical firing guns and defensive aeroplanes.

I am, Sir, your obedient servant,

Oxford, May 2. T. E. HOLLAND.

Attack from the Air.

To the Editor of "The Times."

Sir,—It was far from my desire to appear in the Press as the protagonist of what many people will consider a scare, but since I find myself in that position, may I beg your hospitality for a few more words?

As to the definition of "undefended" towns, Professor Holland allows that the Hague Article is ambiguous; but I will go further than that and suggest that, even if it were not so, an enemy might claim that the case of London was different from that of an ordinary town. He might say that an attack from the air, intended to cause extensive conflagrations or such other damage as I indicated in my lecture, was by no means a wanton bombardment, but was done in the hope of creating such disturbance as would have a sensible effect on our conduct of the war. Further, that his object was to win; that an attack on the enemy's capital is an important point of strategy, and if a particular form of attack was possible for him, it was nothing to him that we were not able to guard against it.

If the attack is likely to effect the enemy's object, I cannot see that the presence of his land forces is necessary to give it sanction. In any case, the position is so far doubtful that I think if the enemy wanted to take such action he would take it, and postpone discussion.

Of course, the "two men in an aeroplane" is rather a *reductio ad absurdum* of my argument. I instanced a single "war-balloon" as an extreme case; but the carrying power of even a single dirigible of the largest size, if expressed, say, in terms of small incendiary shells, is something to take note of.

I am grateful to Professor Holland for the authoritative information he has given us, and glad to think that on the whole we appear to be in agreement.

I am, Sir, your obedient servant,

London, May 5. Louis Jackson, Colonel.

Editorial Department

A higher training and greater individual ability are essential to-day for Infantry than for any other arm. It is more difficult and it takes a longer time to train Infantry to any standard of efficiency to-day than to bring any other arm to a corresponding standard.

The Practical Training of Officers.

APROPOS of the suggestion under the head of "Training" in Colonel Bullard's "Impressions of Service with the 2d Division," it may well be asked why the practical training of our lieutenants is not extended by superior authority to include service with company organizations of the arms of the service other than that to which they are permanently assigned. Why, indeed, should any lieutenant of good standing, who so desires, not be detailed for a tour of duty with each of the three branches of the mobile army? Is it that the instruction which he requires in his own arm is so extensive and so absorbing that it requires the fifteen or more years of his lieutenancy to fit him for his next grade? Or is that a lieutenant trained in the practical duties of an officer of one of the mobile arms can not be trusted with the executive duties that fall to the lot of a lieutenant of one of the other two arms? Or will he be less useful in one arm of the service by reason of knowing the capacities and limitations of the other two? To formulate these questions is to expose their absurdity. And yet the failure of our military authorities to make such details a part of our system of training would seem to indicate that there must be some reason that is not apparent why such a policy is not followed.

The detail of lieutenants for tours of duty in organizations of other arms of the service than that in which they are assigned has long been in vogue in the German, French and other services. There would seem to be even stronger reasons for the adoption of a like policy in our own service.

We are supplied with service schools in abundance, admirably organized and coordinated; but the instruction received therein,

so far as it imparts knowledge of the details of service within a battery, troop or company, is necessarily theoretical. In fact, a practical knowledge of this kind can be obtained only by service with the different organizations. That a tour of duty with company organizations other than those of his own arm of service would be advantageous to an officer, and would increase his efficiency, must be apparent to all. In fact, our service is almost destitute of officers who by experience with the three arms of the service have qualified themselves in a practical way for general staff duty, or for duty as commanders of organizations or of armies made up of the three mobile arms. It is no reflection on our general staff officers or on our general officers to say that their professional qualifications would have been increased by the practical knowledge that they would have obtained during their lieutenancies by service in other arms than that to which they were assigned. As far as may be our officers strive by study and observation to overcome the deficiencies that are inherent in our one-sided system of training, but such study and observation, no matter how diligent one may be, can never take the place of active service with the troops of the various arms.

It is believed that our system of education of officers has advanced to the point at which its extension to include practical service by lieutenants in all three branches of the mobile army, is logical and eminently desirable from every point of view. An officer will surely be no less efficient in his own arm by reason of a tour of duty of a year or two in each of the other arms, and his efficiency when he is assigned to general staff duty or to general command or even with troops exclusively of his own arm will be greatly increased. That we have had, and still have general and general staff officers of noted ability and efficiency who had no early practical training except in their own arm of service does not in the least militate against the proposition advanced. So we have had distinguished general and staff officers who had no military training at all before they entered the army in time of war; but such officers attained efficiency and distinction, not because of the absence of military education and of a broad military experience in their youth, but rather, despite such lack of early military advantages. Educational attainments, supplemented by the broadest practical military experience that we can give, should be within the reach of every young officer

who has an ambition to fit himself for service. It is not in accord with our traditions to maintain a large army, but our people do look to those who are responsible for our military instruction so to train the officers we have that they may be prepared and competent to assume the military direction of the nation in arms if, unhappily, the time should come again when the national existence is imperilled.

The difficulties that would be encountered in putting in practice such a system of instruction as that suggested are not overlooked, but it is believed that they are not insurmountable. If the system of interchangeability between the three arms is found practicable by other nations, it should surely be practicable with us, who have much stronger reasons than any other nation for broadening the scope of the instruction of our officers for general service. Many of our young officers would welcome the opportunity that would come to them by a year of two of service in other branches than their own, and there is every reason to believe that they would acquit themselves with credit under a system of instruction that would broaden their opportunities, and give them a working knowledge of all three branches of service, whose functions are so closely related that the modern military officer must have a practical knowledge of the capacities and limitations of them all if he would meet the requirements of his official position as a commander of combatant forces in the mobile army.

Reorganization.

AFTER a period of expectation on the part of the public as well as on the part of the Army, extending over several years, the report of the General Staff on the Organization of the Land Forces of the United States was given to the public under date of August 10, 1912, and comments and suggestions were invited from "the Army, the National Guard and all others who are interested in the development of a sound military policy for the Nation," and it was further stated that "the General Staff has been directed to proceed with a detailed study of the plan with the view of securing specific recommendations for the executive and legislative action necessary to carry the policy into effect."

More than two years have elapsed since the report was published. So far as known, comment on its provisions has been

favorable. Owing to recent events, an insistent demand seems to be made in the press and throughout the country that action looking to an increase in the efficiency of our land forces should be taken. Emphasis is laid on our unprepardeness to meet military emergencies. There exists a well-grounded opinion that for the money expended for a defensive military force, existing laws and regulations do not give us the maximum, or anything near the maximum, of military efficiency. With a force of about 80,000 men we have but one military division in existence. To actually organize another and place it in the field even as an uninstructed unit would entail delay, and the procedure would not be free from administrative difficulties which it is needless to specify here. This condition has existed for more than two years after the rendition of the report of the General Staff calling attention to our necessities. This period has certainly been long enough for consideration, long enough to warrant us in expecting the promised "specific recommendations for the executive and legislative action necessary to carry the policy into effect." In these two years we have been surrounded by more or less turbulent neighbors. Even now a state of war exists to the North and to the South of us. Our more distant neighbors are also at war. Our government has wisely pursued a policy of peace, and has shown its determination to resort to all honorable means to maintain it. But we are living in the midst of threatening conditions. The public is aware of these facts, and its desires, as voiced through the press and many of its commercial bodies, call for definitive action looking to the increase of our military efficiency.

There is abundant indication that Congress is ready to consider any well-digested "specific recommendations that come to it with the sanction and approval of executive authority," looking to improvement of our military organization. If an increase of our military forces is desired, and this can be made to appear reasonable and necessary, a recommendation to that effect would doubtless receive the careful consideration of those who are responsible for our military legislation.

The appropriations for the support of our land forces have not been ungenerous, but it is believed very generally, both in the service and out of it, that organization on more efficient lines is a public necessity. That we ought to be getting more in the way of military protection than we are getting under existing con-

ditions, more perhaps than it is possible for us to get without an increase in force, is a conviction that is very generally held. Indeed it is the very clear implication of the General Staff's Report that our military force should be slightly increased as well as reorganized on more efficient lines. We are not looking forward to a probability of war. On the contrary, our government's policy, as has been clearly demonstrated, is one of peace, to preserve which it has shown itself ready to go to any reasonable length that may be consistent with a proper degree of self-respect. It is to be hoped that this policy will always be maintained. But in the maintenance of peace the government has many and complex obligations to meet, and it will be able to meet them all the more satisfactorily if the small military force that it maintains is so organized, trained and equipped that it can always act promptly and effectively. It is not so organized now. This is conceded by all who have given the matter serious thought. Then why is action delayed that would remedy the state of unpreparedness in which we find ourselves? Why is not reorganization urged that will enable the military arm to furnish in the way of national protection an adequate return for the money that is expended in its maintenance?

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Some General Deductions.

WHILE the vigorous censorship that is maintained over the theater of war in Europe precludes any but the most general deductions, there are a few salient facts that appear dimly through the mists of censorship that seem to point to conclusions of great importance to the military student, even though such conclusions be but tentative as yet and may be modified in the light of later and more definite information.

The use of machine guns seems very general with all the belligerents. From every field come rumors of their use both offensively and defensively, and of their efficiency as a military arm. We have yet to learn in detail of their organization and of their tactical use, but we know enough to lead us to the conclusion that in our own service the subject of machine guns needs prompt and serious attention to bring our organization equipment and armament abreast of those of modern armies. The imminence of war in Europe has compelled the superior military authorities there to reach working conclusions, while we have pursued a policy of

watchful waiting in the hope, apparently, that the experience of others might lead us to correct conclusions as to what we should do. In the meantime our machine guns have a tentative organization against which nearly all who serve with them protest. Our armament, our equipment, especially the former, are freely criticized. All goes to emphasize our state of unpreparedness with respect to machine guns, for which state we may be inclined to hold the legislative department of the government responsible when, in fact, a very fair proportion of the responsibility may be laid at our own door.

It is evident that machine guns are destined to play an increasingly important rôle in future wars. What are we going to do about it?

Our information is too incomplete as to changes in tactics to warrant us in making deductions therefrom, but it is becoming apparent that many interesting tactical principles are finding new application in a way that will require the careful study of military critics. To what extent is massed attack feasible under modern fire, how such attacks should be executed, and are the results therefrom, on the whole, such as to justify their use, are questions which naturally arise in the military mind in view of current events.

Heavy field artillery seems to be playing an unaccustomed rôle on the field of battle. Shall we have to recast the organization of our field artillery to meet new conditions made possible by new and more efficient means of transportation?

Automobiles and auto-trucks have taken an unprecedented place in the field of transportation for both men and matériel. Such vehicles seem to have been commandeered wherever found to supplement those that were in the military service, and seem to have been of the very greatest service both during the period of mobilization and on the field. We may be prepared to learn of some very surprising feats of transportation when the censorship is lifted and the history of the war is written.

Aerial warfare has not played so important a part, up to the present time, as was anticipated. Some indications of the destructive effect of aerial attacks have become apparent, but on the whole the results of such attacks on hostile forces or on warships and defensive works have been inconsiderable, and the fire defense against aerial machines seems to have been quite effective. Of the reconnaisance work of aerial machines we know but little

except that it has been very active and doubtless effective. Aerial operations in one form or another have evidently entered the military field as a permanent feature.

The veil of secrecy that has so thoroughly covered the theater of operations shows how effectively the lesson of the Manchurian War was learned. The conditions that produced a McGahan, a Forbes, and other noted war correspondents of their type, are gone probably never to return. The field of the neutral military observer is also very much limited, and his opportunity of observation, even when he is permitted to accompany hostile armies, will be very much circumscribed. For data on which to base the history of the war, and for the military lessons to be learned therefrom, we must rely largely on the reports furnished by the general staffs of the respective belligerents after the war is over. Their reports will doubtless be biased, but careful coordination and patient study will probably give us the true story in the end.

It is not apparent that the functions of any one of the three arms of service of the mobile army have become relatively less important. In fact, their interdependence seems more marked than ever. While it is possible that much of the scouting may be done by aeroplanes, still the cavalry by reason of its mobility finds very extended use. If it is no longer the "eyes of the Army," it may be said to be its antennæ, by which it feels its way along the path of least resistance to the field where the supreme effort of the Army shall be put forth. The field artillery's functions seem quite as important as ever; perhaps more so by reason of the increased efficiency of means of transportation. But the strain and stress of battle fall, as ever, in their severest form on the infantry. As a distinguished contemporary critic says: "* * *As in the past, the main strength of an Army is its Infantry, and as the Athenians at Marathon relied on their foot soldiers with spear and sword, and the English at Crecy on their archers with their cloth-yard shafts; so all of the seven contending nations have staked their hazard on their Infantry. The Artillery has prepared the way, as it always has since the artillery ceased to be stones slung from catapults and became a scientific weapon, but few battles in the long record of war have been won by artillery, and no battle has been lost until the infantry were put out of action." If the intensity and range of modern fire have increased, if the difficulty of driving home an attack, has become greater, so much the greater will be the demand made on the infantry for

its utmost effort, for the supreme self-sacrifice without which victory against trained and disciplined troops cannot be won. It is apparent that more than ever infantry troops must be trained and disciplined to stand the strain of modern battle, and more closely than ever must it rely on the cooperation of the auxiliary arms—its comrades of battle. More than ever will it be a crime for a nation to send its untrained and undisciplined infantry against trained troops, and more than ever must the preparation for war be undertaken in time of peace if we would ward off the national disaster and shame that must result if we postpone our preparation until the evil days of war come upon us.

The importance of adequate preparation in time of peace to meet the emergency of war is emphasized by current events in the most forcible manner. To fortify this conclusion we need not wait for more definite information. We already have it a-plenty. The restraints of treaties do not seem to restrain. The pæans of unreasoning Pacifists who have been so busy recently in attempting to delude the public into the belief that the era of universal peace was about to be ushered in have become silent. The nature of man has not changed. Beneath the veneer of civilization we still find the human animal who, as Emerson says, was "born into a state of war." In certain psychological conditions he knows no other restraint but that of force. History shows that in all ages of the world these psychological conditions are recurrent. Woe and futile repentance are the ultimate fate of the nation that does not recognize this fact, and that permits itself to be guided by the chimeras of visionary but well-meaning enthusiasts instead of by the lessons of history. Peace is worth all that the Pacifist claims for it. It is worth the sacrifices that we often make to maintain it. But it is worth even more. It is worth fighting for if need be, when other honorable means of preserving it fail, and we should be prepared even for that eventuality by making available our resources for the protection of our interests. There is now an insistent demand from the public that this should be done. Every American who has the interest of his country at heart should exert his influence in this direction to the utmost lest evil days fall on us also, and we find out too late that we have been "dancing in the weeds of peace" without giving adequate thought to the serious conditions that a day may bring forth.

Book Reviews.

①

Balck's Tactics, Vol. II. Authorized translation from the German by 1st Lieut. Walter Krueger, 3d Infantry, U. S. Army. Fort Leavenworth: U. S. Cavalry Association, 1914. Price, $3.00 postpaid.

Most of our infantry officers are familiar with the first volume of this work dealing with the tactics of infantry.

This volume, written in the same style, deals with the cavalry and the artillery of the mobile army.

Under the subdivision Cavalry is given the organization of the cavalry arm in the principal armies of Europe, tactical and drill formations, a general discussion of the tactics and use of cavalry and the provisions of the different cavalry drill regulations showing the differences in doctrine and practice in European armies.

The table, page 13, giving the organization of the cavalry division, bears little resemblance to that in our new F. S. R.

The German cavalry division which differs but little from the others has an aggregate strength of 5000 men and 5300 horses, has two batteries horse artillery and a detachment of 32 pioneers as auxiliary troops.

France has the same horse artillery, one light signal corps *section* and a hospital corps *detachment*. Others about the same.

In our paper division of cavalry we have a battalion of pioneers, a regiment of horse artillery, a battalion of signal troops, 2 ambulance companies and 2 field hospitals as auxiliaries.

Evidently our people have a very different idea of the use of the cavalry division in modern war from that entertained abroad.

The author discusses the size of the escadron regiment and division and seems to differ from most of our own cavalry officers. The author it seems to me fails to make out a strong case.

The general discussion as to the use of cavalry in war is clear and convincing. The day of cavalry is by no means past. I believe the present war will prove Colonel Balck correct. The treatment of the subject of cavalry is very clear and is particularly adapted to give the student officer of other arms the necessary information he should have.

Artillery is treated in much the same way as the cavalry.

The organization of this arm in the various armies is given, also their armament.

The discussion of flat trajectory and high angle guns with the effects expected to be accomplished by each, methods of fire, etc., is all very essential information for the infantry officer.

The number of guns per thousand rifles is discussed. There is no doubt we want as many as can be profitably used. In detachment warfare there will be unlimited room but not in a great war. The guns must fire over their infantry and those of the division can only have the same frontage as the infantry. The author points out the shrinkage in strength of infantry while the guns remain the same during the progress of war. Our officers should try to figure from German experience cited what our shrinkage would be.

The book is well calculated to give the infantry officer the knowledge of the sister arms absolutely necessary to him if he would be prepared to play his part in war.

The book has another value just at this time. All of us will doubtless try to follow events in Europe. To do it intelligently we must know their army organization and general ideas as to use of the different arms.

Of course the above information can be obtained from other sources but this book gives it clearly and concisely as to the two arms—cavalry and artillery.

Lieutenant Krueger has put his translation into most readable English. The book itself is well printed, with clear type and on good paper.

Germany and the Next War. By Gen. Frederick von Bernhardi. New York: Longmans, Green & Co., 1914. Popular edition, cloth 12mo, 288 pages. Price 75 cents.

If people and Government stand together, resolved to guard the honor of Germany and make every sacrifice of blood and treasure to insure the future of our Country and our State, we can face approaching events with confidence in our right and in our strength.

Written three years ago by the well-known military writer, General Bernhardi, these prophetic words are now to be proved true or false by the stern arbitrament of war.

Writing at that time, Bernhardi said of the various Peace movements:

If the object is to abolish war entirely and to deny its necessary place in historical development, this aspiration is directly antagonistic to the great universal laws which rule all life. War is a biological necessity of the first importance, a regulative element in the life of mankind which cannot be dispensed with, since without it an unhealthy development will follow, which excludes every advancement of the race, and therefore all real civilization.

Within a few lines there is thus summed up the author's point of view, and the entire book is based on his premises. It remains for him but to discuss the preparations to be made by Germany to meet what was to the author an inevitable conflict, and this he does in a masterly style.

General Bernhardi frankly avows the doctrine that the Germans must, regardless of the rights and interests of other peoples, fight their way to predominance, and force upon humanity German culture and spirit, having proved themselves, by the power of their arms and the loftiness of their ideals, the best qualified of European peoples to rule. War on all sides is contemplated and met with equanimity; war with England, whose naval power is to be frittered away by mines and submarine attacks; France to be completely overthrown; the permanent neutrality of Belgium ridiculed. The balance of power in Europe as it stood on August first of this year must be deliberately destroyed.

To quote from Sir Conan Doyle:

"Bernhardi's programme, as outlined in his book, is actually being carried through. The whole weight of the attack was to be thrown upon France. Russia was to be held back during her slow mobilization, and then the victorious legions from Paris were to thunder across in their countless troop trains from the western to the eastern firing line. Britain was to be cajoled into keeping aloof until her fate was ripe. Then her fleet was to be whittled down by submarines, mines and torpedo-boats until the numbers were more equal, when the main German fleet, coming from under the forts of Wilhelmshaven, should strike for the conquest of the sea. Such were the plans, and dire the fate of the conquered."

The present volume is a reprint, in a popular edition and at a low price, of the book published something over two years ago and which even then attracted much attention.

Every officer of the Army will read it with interest. It gives facts and figures as to the combatant strength that may be taken as authoritative and that are presented in a most readable style.

Text-book of Military Hygiene and Sanitation. By Lieutenant-Colonel Frank R. Keefer, M. D., Medical Corps, U. S. Army; Professor of Military Hygiene, U. S. Military Academy. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, 12mo, 305 pages, illustrated. Price, $1.50 net.

This work discusses the usual subjects embraced in works on military hygiene. It gives in simple language the principles upon which hygiene and sanitation are based, but in many instances lacks the details necessary for the application of these principles. For this reason it might have been more appropraite to entitle the work "An Elementary Military Hygiene" instead of "A Text-Book of Military Hygiene and Sanitation." It was evidently written for the instruction of line officers, though the author does not state what class of military men it was intended for. It can hardly replace other smaller works on this subject, such as Woodhull and Ashburn.

The subject of the disposal of wastes is more thoroughly discussed than most of the other subjects, and the details concerning methods are more clearly set forth.

The chapter on sanitation of marches, camps, and battlefields, covers these subjects very satisfactorily, while the chapter on venereal diseases is well presented both from the moral and physical standpoint.

Considerable space is devoted to the subject of alcohol and narcotics. With reference to the former, the author appears to have accepted the views of extremists on this subject, though in his preface he states that certain of the data in this chapter cannot be accepted as wholly proved.

The text is aided by the addition of a glossary of technical terms.

The Philippines—Past and Present. By Dean C. Worcester, Secretary of the Interior of the Philippine Islands 1901-1913; member of the Philippine Commission 1900-1913. New York: The Macmillan Co., 1914. Cloth, 8vo, 2 vols., 1024 pp., illustrated. Price $6.00 per set.

Probably no one is better fitted than Mr. Worcester to write of the results of the American occupation of the Philippines, though the controversial tone of the better part of the first volume of this extensive work undoubtedly detracts from its interest.

The author does not mince words in attempting to refute the statements of Judge J. H. Blount in his book on "The American Occupation of the Philippines," but the question constantly arises, "what will be Judge Blount's rejoinder?", with the effect always in the mind that possibly the last word has not been said, and the fair-minded man is unwilling to adopt Worcester's conclusions or dismiss the particular question until Judge Blount shall have replied, and with such reply will necessarily follow the answer of the present writer. So the matter might go on indefinitely.

Volume I opens with an account of the author's unconscious training and preparation for his work as Secretary of the Interior, including two visits to the Islands during the Spanish occupation. All, of course, with no conception of the large part he was later to play in the development of the Philippines. He then very fully discusses the circumstances connected with Aguinaldo's departure from Manila under arrangement with the Spanish authorities, and the diplomatic negotiations with Aguinaldo attending the taking over of the Isalnds by the United States.

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The claim that any authoritative promise was ever made to Aguinaldo of autonomous government for the islands seems to be confuted beyond cavil. The mass of documents cited at length from all sources appears to establish the contrary beyond question, and to point to intentional duplicity and treachery on the part of the Philippine leaders.

Constant reference is made in the foot-notes to the manuscript of the Philippine Insurrection Records or to the proof-sheets prepared by Maj. J. R. M. Taylor of the Army. It would be interesting to know why these historical documents never got beyond the proof-sheet stage, as on them to a very great extent must be based the ultimate history of this period of the Philippines, to be compiled by some future historian after the actors in the drama shall have passed away.

The latter part of the first volume brings the narrative of events down to the assumption of power by the present Governor General, and his prompt change of the policies of the former administration. While the author does not directly say so, the intimation is plain that he does not look upon the future as conducive to rest and quietness as the Filipinos acquire control.

The second volume is wholly interesting and instructive,

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devoted as it is to a narrative of the exploration of non-Christain territory and the government of the wild tribes there, with its attendant problems of slavery and peonage; the picturesque features of the Islands, means of communication, commercial possibilities, and the beneficial results of American rule. There is a concluding chapter entitled "Is Philippine Independence now Possible?" With the author's well-known opinions, his answer to the question may be surmised.

If Major Taylor's splendid work is always to remain buried in the archives of the Government, the present volumes will be perhaps the most authentic narrative of the first decade of the American occupation, though one cannot help regretting that the careful and complete work of Major Taylor should not be published in the interest of historical accuracy, rather than that extracts from it should form but foot-notes to another author's work.

Army Orders. Compiled by Capt. James A. Moss, U. S. Army. Menasha, Wis.: George Banta Publishing Company, 1914. Cloth 12mo, 652 pages. Annual price $3.00.

In an advertising circular accompanying this volume, the service is informed pictorially that Captain Moss has compressed within one volume weighing 1½ pounds and containing 50 cu. in. the "living material" embraced in more than twenty volumes of War Department Orders and Circulars weighing 53 pounds and containing 2,000 cu. in. "Every man is presumed to know the law," said the young district attorney in pressing the court for a charge for conviction. "It would be preposterous to make any such presumption," said the judge, "the rule is 'Ignorance of the law excuses no one.'" More than any other class of citizens it is essential that military men be not ignorant of the law which governs them since every order has the force of law. The value of such a compilation of standing orders will at once be apparent to any one who has served recently in the Philippine Department where such a volume, prepared in the office of the Adjutant General, is at present in use. Officers arriving in this Department can, in a very short time, familiarize themselves with all orders in force. As long as there are human needs there will be men to supply them. Captain Moss has added another to his already large list of valuable service manuals. Without in the least desiring to deny him the legitimate fruits of his labor one is tempted to ask "why was this work not done by the Adjutant General's Department?"

The War and America. By Hugo Münsterberg. New York: D. Appleton & Co., 1914. Cloth, 12mo, 210 pages. Price $1.00.

With the cutting of the direct cables to Germany, Prof. Münsterberg seems to be the self-appointed press agent and champion of the German cause, as witnessed by his numerous letters to the press and now by this book, completed barely five weeks after the war started. The publishers state that this is the first authoritative work on the great European war, and shows its real motives and issues and their meaning for America. They say, too, that every American should withhold his judgment on the war until he has read this book. That it is one of the first books, if not the first, is true, but most Americans will be inclined to go further than

the publishers advise and to withhold their judgment, if not their sympathies, longer than it takes to read the volume. The claim that the book shows the real motives and issues of the war is rather broad and will not be accepted by everyone. Time alone can develop the real motives that have in a single night overthrown all the boasted standards of our civilization and involved millions of people in armed conflict. One may, however, find some of the causes in Bernhardi's book, reviewed in this issue of the JOURNAL—the German need to expand and the English commercial opposition to this expansion. Münsterberg, however, rather cavalierly disposes of such writers as Bernhardi as "hashish dreamers," and says that it is preposterous to identify the government with them, but we are not quite ready to accept Professor Münsterberg's dictum so far as it relates to an author like General Bernhardi. Nor can one so readily dispose of an author like Bernhard von Bülow in his "Imperial Germany," who may certainly be said to represent the views of his government, at least in so far as they were held during his premiership.

The book is really a series of essays written under the stress of deep feeling, and is interesting if for no other reason than that it gives one point of view. While the intimation throughout is that Germany will win, still this is in part offset by such statements as in the chapter on Russia:

> Russia has seen reverses which would have crushed a weaker nation; defeats in Turkey, defeats in East Asia; she hardly felt them. The clumsy bear withdrew his heavy paw for a while to put it forth with tremendous power at another spot. Russia is the one nation on earth which is invincible.

Elements of Field Artillery. By Maj. Harry E. Bishop, 5th Field Artillery. Menesha (Wis.): George Banta Publishing Co., 1914. Cloth, 8vo. Price $1.50.

In a modest and unassuming manner Major Bishop has presented the elements of field artillery for the consideration of officers of all branches of the service. For the artillery officer the emphasis laid upon the interdependence of all arms, the necessity of cooperation and the means for obtaining it, makes the book at once a guide for action and a stimulus for continued thought along these vital lines. For officers of other branches it is not

only an authoritative book of ready reference on matters formerly inaccesible but is also a broad-minded presentation of the subject of field artillery in its true rôle as the support of friendly infantry.

The frank statements contained in the introduction win the reader by their acknowledgment of the fact that much of the misunderstanding of artillery on the part of officers of other branches has been caused by an unjustifiable mental attitude on the part of artillery officers which, fortunately, has ceased to exist.

The necessary definitions are confined to those essential to an understanding of the text. The historical mechanical evolution of modern field artillery matériel is presented in a brief and interesting manner.

The characteristics, powers and limitations of field artillery in general and of our own field artillery in particular are given in such a way that general officers may understand what they have at their disposal and infantry and cavalry officers may realize what they may expect from both friendly and hostile batteries.

The mechanical properties of our light artillery matériel, the differences between it and our heavy field artillery matériel and the details of organization necessary for a comprehensive understanding of United States field artillery as it exists today, are explained briefly and concisely.

The information service, which is of such prime importance to the tactical and technical control of field artillery and which has been almost neglected in our service until very recently, is given due emphasis as a portion of the service of field artillery which is intimately connected with other arms; and the technical matters which are of primary interest to the field artillery itself are properly subordinated and confined to simple explanations of mathematical principles, which have too often in the past been given too much prominence in books of this kind. The chapters on the employment of field artillery, cooperation, orders and position in column, contain clear expositions of facts and principles which should be studied carefully by every officer of the mobile army. The chapters on reconnaissance, selection and occupation of position, combat and ammunition supply are clear statements of the manner in which the well-trained artillery officer may be expected to perform the task assigned him. From their very nature the chapters on protection from field artillery fire, field artillery supports, umpiring field artillery and the disposition of captured artillery are of vital interest to every officer who expects

ever to command troops in a force of all arms either in peace or war.

The book contains nothing not at present authorized by drill regulations or the most approved practice; and for this reason is especially valuable for the reason that officers of other branches, not previously familiar with the subject, can with confidence utilize it as an authority.

Militia officers, who are naturally and primarily interested in the welfare of one organization, will find in Major Bishop's book a most enlightening reiterance of the correct principle that all arms are interdependent.

Major Bishop has avoided most successfully the air of combined mystery and superiority which has in the past confused and antagonized infantry and cavalry officers. He lays no claim to originality, but at once wins his reader by his very evident honesty and sincerity of purpose and his successful handling of a subject which has previously been almost totally neglected. It is not too much to say that this book should form a part of the professional library of every officer of the mobile army.

①

Seventy Problems, Infantry Tactics. By Lt.-Col. John F. Morrison, 21st Infantry. Fort Leavenworth: U. S. Cavalry Association, 1914. Cloth, 8vo, 564 pages. Price, including case of maps in uniform binding, $3.25; text only, $2.00.

This book is the most important collection of tactical studies yet published in our country. It represents the work of the author during the five years he was at the head of the tactical department at the Army Service Schools. It is divided into four groups of problems, the first group of eleven problems dealing with the battalion in combat, the second of four problems and three lectures discussing security problems; the third group of twenty-two problems considers the handling of the reinforced brigade, while the fourth group of thirty-three problems deals with the conduct of a United States division.

Scattered through the book are lectures on infantry tactics, small arms ammunition supply, and outlines of lectures on how to solve tactical problems, how to construct maneuver problems, etc., with some examples of maneuver problems notable for their conciseness.

Time has not permitted me to go over all the problems in the collection but many of them are old friends, given to the students while I was myself stationed at Leavenworth and closely following the work of the service schools although on duty at the Post. The feature of them is that each conveys a tactical lesson and, I might almost add, a moral lesson; and teaches it in an interesting and suggestive way.

Such a book would be an acquisition to the military literature of any language, but to us in the United States, who have been dependent for so long on foreign books or translations of them for our study of tactics, it is most welcome to have at last a collection of tactical studies of the first rank of our own production. One need say no more to those who know Colonel Morrison than that the work is worthy of the author.

H. LIGGETT,
Maj. Gen. U. S. A. Comd'g 4th Brigade

Books Received.

William of Germany. By Stanley Shaw, LL.D. New York: The Macmillan Company, 1913. Cloth, 8vo, 395 pp. Price, $2.50.

Imperial Germany. By Prince Bernhard von Bülow. Translated by Marie A. Lewenz, M.A. New York: Dodd, Mead & Co., 1914. Cloth, royal 8vo, 342 pages, gold tops. Price $3.00.

Napoleon at Bay. By F. Loraine Petre. New York: John Lane Company, 1914. Cloth, 8vo, 218 pp., with maps and charts, gold tops. Price $2.50.

The Balkan Wars, 1912-1913. By Jacob Gould Schurman. Princeton: University Press, 1914. Cloth, 12mo, 140 pp., gold tops. Price $1.00.

Air Craft in War. By J. M. Spaight, LL.D. London: Macmillan & Co., 1914. Cloth, 8vo, 172 pp. Price $2.00.

Famous War Correspondents. By F. Lauriston Bullard. Boston: Little, Brown & Co., 1914. Cloth, 8vo, 435 pp. Price $2.00.

Arms and Industry. By Norman Angell. New York: G. P. Putnam's Sons, 1914. Cloth, 12mo, 248 pages. Price $1.25.

American Historical Association

MILITARY HISTORY PRIZE

CONDITIONS OF AWARD

A prize of $200 will be awarded by the American Historical Association in 1915 for the best unpublished monograph in military history submitted to the Committee before September 1, 1915.

I. The monograph must be based upon independent and original investigation into some field of the military history of the United States. While the Committee will receive any scholarly work on any American war, it would suggest that in the selection of topics for investigation preference be given to the Civil War. The monograph may deal with a campaign, a battle, a phase or aspect of a campaign or battle, with the fortunes of a corps or division during a battle, or with such subjects as the mobilization or organization of volunteer forces, the material, transportation or food supply of an army, or strategy and military policy.

II. The monograph must be a distinct contribution to knowledge.

III. The monograph must (1) be based upon exhaustive research, (2) conform to the canons of historical criticism, (3) be presented in scientific form, (4) contain exact references to resources and secondary works, and (5) be accompanied by a full critical bibliography.

IV. The monograph should not exceed one hundred thousand words in length. The manuscript should be typewritten, and must be neat, correct, and in form ready for the printer.

(In the typewriting of essays competitors are urged to use a strong, rather heavy paper of letter size; to have both text and notes double spaced; to number the notes consecutively for each chapter, and to insert each note in the text immediately after the line in which its index number occurs, separating the note from the text by lines above and below extending across the page. In abbreviating the titles of works care should be taken to make the abbreviations clear, consistent, and self-explanatory.)

V. In making the award the Committee will consider not only research, accuracy, and originality, but also clearness of expression, logical arrangement, and literary form. The prize will not be awarded unless the work submitted shall be of a high degree of excellence.

VI. The successful monograph shall remain the property of the author. The American Historical Association assumes no responsibility for publication of the prize essay, but the Committee has already received offers respecting its publication which will be communicated to the winner of the prize.

VII. The monograph must be accompained by the name and address of the author, in a sealed envelope, and a short introduction setting forth the character of the material and the purpose of the work.

Address all correspondence relative to the Military History Prize to Captain A. L. Conger, Fort Leavenworth, Kansas.

THE UNITED STATES INFANTRY ASSOCIATION

"The object of the Association shall be to promote the efficiency of the Infantry arm of the military service of our country by maintaining its best standards and traditions, by fostering esprit de corps, by the dissemination of professional knowledge, and by the exchange of ideas as to the utilization of such knowledge with particular reference to the rôle of infantry in modern war."—Article III of the Constitution.

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CONDITIONS OF MEMBERSHIP.

All commissioned officers in good standing, or former commissioned officers of honorable record of the regular or volunteer military or naval service and of the organized militia are eligible for regular or associate membership in the Association. Membership dates from the first day of January or July nearest the date of enrollment.

Dues are $1.00 annually, payable in advance. Payment of dues entitles a member to all the privileges of his class and to all ordinary publications of the Association except the INFANTRY JOURNAL, to which subscription is extra. Members, however, may obtain the JOURNAL for $2.00 the first year, and $1.00 yearly thereafter.

All communications should be addressed to the Secretary, United States Infantry Association, Room 518, Union Trust Building, Washington, D. C.

Annual Meeting.

The annual meeting will be held in Washington at the offices of the Association, Union Trust Building, at 5 p.m., Monday, December 28, 1914. Officers of the Association are to be elected at that time as follows: President, Vice-President, and five members of the Executive Council, vacancies having been occasioned by expiration of term of office or resignation of the following officers: Col. Edwin F. Glenn, Col. Wm. P. Evans, Col. D. C. Shanks, Lt. Col. Harry Hale, Maj. Peter Murray, Maj. W. P. Jackson.

It is desired by the Council that one member be elected from each of the branches at Fort Leavenworth and West Point, and that the other members of the Council be selected from among the officers stationed in or near Washington, so that a quorum of the Council may be easily called for the transaction of business.

The West Point branch has nominated the following officers: *President:* Colonel E. F. Glenn; *Vice-President:* Major B. A. Poore; *Executive Council:* Lt. Col. W. M. Wright, Lt. Col. Jas. H. McRae, Major E. Sigerfoos, Captain Geo. H. Estes; and the Leavenworth branch has nominated the following ticket: *President:* Lt. Col. Wm. M. Wright, *Vice-President:* Lt. Col. Wm. F. Martin, *Executive Council:* Lt. Col. J. P. O'Neil, Major W. S. Graves, Major G. B. Duncan, Captain F. S. Cocheu, Major J. K. Miller.

New Members.

Bandholtz, C. H., 2d Lieutenant, 29th Infantry.
Boody, H. B. P., Major, California National Guard.
Bryant, Richmond, 2d Lieutenant, U. S. Marine Corps.
Cleary, Alexander W., 2d Lieutenant, 13th Infantry.
Doe, J. A. 2d Lieutenant, 11th Infantry.
Haass, Walter F., Captain, 1st Infantry, Michigan National Guard.
Lamphier, Thomas G., 2d Lieutenant, 5th Infantry.
Martin, H. S., 2d Lieutenant, 15th Infantry.
Orton, William R., 2d Lieutenant, 16th Infantry.
Peckham, E. W., Captain, 7th Infantry, California National Guard.
Stover, W. W., Lieutenant-Colonel, 5th Massachusetts Infantry.
Tucker, Albert, 2d Lieutenant, Philippine Scouts.
Watson, J. D., Captain, Coast Artillery Corps.

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